

SEQUENCE LISTING

<110> ALBANG, Richard
FOLKERS, Ulrike
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WAGNER, Christian
DE BOER, Lex
MEIMA, Roelf Bernhard

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tgaggagatg	ccgaagcatg	cttggcaaa	cagaagccac	tgtaaaaac	cattcacaga	3780
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48

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1					5				10					15	
gca	att	gcg	gta	aaa	ata	gaa	cag	cca	gga	ata	aat	cca	aat	ccc	aca
Ala	Ile	Ala	Val	Lys	Ile	Glu	Gln	Pro	Gly	Ile	Asn	Pro	Asn	Pro	Thr
					20				25					30	
gct	act	gta	cga	aat	ggc	acc	tac	tat	ggt	ctc	cat	aac	cag	cac	tat
Ala	Thr	Val	Arg	Asn	Gly	Thr	Tyr	Tyr	Gly	Leu	His	Asn	Gln	His	Tyr
					35				40				45		
aat	caa	gac	ctc	ttt	ctc	ggt	att	cca	tat	gca	cag	caa	cct	att	ggt
Asn	Gln	Asp	Leu	Phe	Leu	Gly	Ile	Pro	Tyr	Ala	Gln	Gln	Pro	Ile	Gly
					50				55				60		
gac	ctt	cgc	ttg	cgg	acc	cca	cga	tca	atg	aac	acc	tcc	tgg	cca	gta
Asp	Leu	Arg	Leu	Arg	Thr	Pro	Arg	Ser	Met	Asn	Thr	Ser	Trp	Pro	Val
					65				70				75		80
cca	aga	aat	gca	aca	gaa	tat	tca	ccc	gca	tgt	gtt	gga	ttt	aat	cag
Pro	Arg	Asn	Ala	Thr	Glu	Tyr	Ser	Pro	Ala	Cys	Val	Gly	Phe	Asn	Gln
					85				90				95		
aca	gag	ggg	ggt	gct	tcc	gaa	gcc	tgc	ctt	act	ctc	aat	gtc	gtc	cgc
Thr	Glu	Gly	Ala	Ser	Glu	Ala	Cys	Leu	Thr	Leu	Asn	Val	Val	Arg	Pro
					100				105				110		
gca	agc	atc	gct	ctt	tct	gaa	agt	ctt	ccc	gtt	gct	gtc	tgg	att	cat
Ala	Ser	Ile	Ala	Leu	Ser	Glu	Ser	Leu	Pro	Val	Ala	Val	Trp	Ile	His
					115				120				125		
ggc	ggg	gga	ttc	acc	tcc	ggc	tct	tca	tca	gag	aaa	caa	tac	aat	ctg
Gly	Gly	Phe	Thr	Ser	Gly	Ser	Ser	Ser	Glu	Lys	Gln	Tyr	Asn	Leu	
					130				135				140		
tcc	ttc	atc	gtt	gat	cag	tca	gtc	caa	atg	gaa	aag	ccc	gtt	atc	gca
Ser	Phe	Ile	Val	Asp	Gln	Ser	Val	Gln	Met	Glu	Lys	Pro	Val	Ile	Ala
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gtc	agt	cta	aat	tat	cgt	ctt	caa	tgc	tgg	ggt	ttt	atg	tgg	agc	aag
Val	Ser	Leu	Asn	Tyr	Arg	Leu	Gln	Cys	Trp	Gly	Phe	Met	Trp	Ser	Lys
					165				170				175		
gag	atg	aag	gaa	gcc	gga	gta	ggg	aac	ctg	gga	ctt	aga	gac	caa	cga
Glu	Met	Lys	Glu	Ala	Gly	Val	Gly	Asn	Leu	Gly	Leu	Arg	Asp	Gln	Arg
					180				185				190		
tta	gct	ctg	cat	tgg	ata	caa	gaa	aac	att	gct	gct	ttt	ggt	gga	gac
Leu	Ala	Leu	His	Trp	Ile	Gln	Glu	Asn	Ile	Ala	Ala	Phe	Gly	Gly	Asp
					195				200				205		
cct	gct	cag	gtt	aca	att	tgg	ggt	gaa	agt	gcc	ggc	gct	aat	agt	gtt
Pro	Ala	Gln	Val	Thr	Ile	Trp	Gly	Glu	Ser	Ala	Gly	Ala	Asn	Ser	Val
					210				215				220		
ggc	aca	cat	ctg	gtt	gct	tac	gga	ggg	cgc	gat	gat	ggt	ata	ttc	cgt
Gly	Thr	His	Leu	Val	Ala	Tyr	Gly	Gly	Arg	Asp	Asp	Gly	Ile	Phe	Arg
					225				230				235		240
gca	gct	atc	agt	gaa	agt	ggt	gcc	cca	agt	gtt	tac	caa	cgt	tat	cca
Ala	Ala	Ile	Ser	Glu	Ser	Gly	Ala	Pro	Ser	Val	Tyr	Gln	Arg	Tyr	Pro
					245				250				255		
aca	cct	gct	gaa	tgg	cag	ccc	tat	tat	gat	ggt	att	gtg	aat	gca	tca
Thr	Pro	Ala	Glu	Trp	Gln	Pro	Tyr	Tyr	Asp	Gly	Ile	Val	Asn	Ala	Ser
					260				265				270		
ggc	tgc	agt	tca	gca	acg	gat	act	ttg	gct	tgt	ctc	cga	aca	att	cca
Gly	Cys	Ser	Ser	Ala	Thr	Asp	Thr	Leu	Ala	Cys	Leu	Arg	Thr	Ile	Pro
					275				280				285		
act	aac	ata	ttg	cat	ggc	atc	ttt	gac	aac	acg	tct	att	gta	ccc	atg
Thr	Asn	Ile	Leu	His	Gly	Ile	Phe	Asp	Asn	Thr	Ser	Ile	Val	Pro	Met
					290				295				300		
cac	gct	att	tca	ggc	ctc	agc	gga	gca	aaa	ttc	att	cct	gtc	ata	gat
His	Ala	Ile	Ser	Gly	Leu	Ser	Gly	Ala	Lys	Phe	Ile	Pro	Val	Ile	Asp
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gac	gac	ttc	att	aaa	gag	agt	gcc	acg	gtt	cag	ctc	cag	aag	ggc	aac
Asp	Asp	Phe	Ile	Lys	Glu	Ser	Ala	Thr	Val	Gln	Leu	Gln	Lys	Gly	Asn

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Phe Val Lys Val Pro Tyr Leu Ile Gly Ala Asn Ala Asp Glu Gly Thr			
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Ala Phe Ala Val Glu Gly Val Asn Thr Asp Ala Glu Phe Arg Glu Leu			
355	360	365	
gtc aaa ggt tgg ggc ctc aac aac gct acc acg gat atc ttg gag gcc			1152
Val Lys Gly Trp Gly Leu Asn Asn Ala Thr Thr Asp Ile Leu Glu Ala			
370	375	380	
cta tac cca gac att cct cag ata gga atc ccc gcc ata atg gtt gga			1200
Leu Tyr Pro Asp Ile Pro Gln Ile Gly Ile Pro Ala Ile Met Val Gly			
385	390	395	400
agg cca ccg tcc gga tat gga aat caa tac aag cgt gtg gcc gca ttt			1248
Arg Pro Pro Ser Gly Tyr Gly Asn Gln Tyr Lys Arg Val Ala Ala Phe			
405	410	415	
cag ggt gat gtt aac atc cat gcc gca cgt agg ttg acc agt cag atc			1296
Gln Gly Asp Val Asn Ile His Ala Ala Arg Arg Leu Thr Ser Gln Ile			
420	425	430	
tgg tca tcc cgc aat atc tca gta tat agc tac atg ttt gac gtt atc			1344
Trp Ser Ser Arg Asn Ile Ser Val Tyr Ser Tyr Met Phe Asp Val Ile			
435	440	445	
agc cct gga tat ggc ccc tct gct ggt tcc tat gct ggg gct act cat			1392
Ser Pro Gly Tyr Gly Pro Ser Ala Gly Ser Tyr Ala Gly Ala Thr His			
450	455	460	
ggt act gat att ccg tac gtt ttc tat aat ctg gat ggc ctg ggg tat			1440
Gly Thr Asp Ile Pro Tyr Val Phe Tyr Asn Leu Asp Gly Leu Gly Tyr			
465	470	475	480
gac tcg aac aac aag tcc ata gaa agc ata cct aac agt tat tcc cgc			1488
Asp Ser Asn Asn Lys Ser Ile Glu Ser Ile Pro Asn Ser Tyr Ser Arg			
485	490	495	
atg agc aaa att atg tca aga atg tgg gtc agt ttt gtg aca aca ttg			1536
Met Ser Lys Ile Met Ser Arg Met Trp Val Ser Phe Val Thr Thr Leu			
500	505	510	
gac cca aat cat tct gga ggt atg gtc cca cat ccc att cct atg att			1584
Asp Pro Asn His Ser Gly Gly Met Val Pro His Pro Ile Pro Met Ile			
515	520	525	
gcg caa tgt cag acc cga gct gaa tca act atc ttc tta gga act aat			1632
Ala Gln Cys Gln Thr Arg Ala Glu Ser Thr Ile Phe Leu Gly Thr Asn			
530	535	540	
gtt cag tgg ccg cca tac aat atc gat aat ccg gag ata atc ttt ttc			1680
Val Gln Trp Pro Pro Tyr Asn Ile Asp Asn Pro Glu Ile Ile Phe Phe			
545	550	555	560
gat acc gat gtc acg aac ctc aca tat act tgg ccc gca ggt ctt tac			1728
Asp Thr Asp Val Thr Asn Leu Thr Tyr Thr Trp Pro Ala Gly Leu Tyr			
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gcc cac tgg tgg taa			1743
Ala His Trp Trp			
580			

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<213> Aspergillus niger

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Asn Gln Asp Leu Phe Leu Gly	Ile Pro Tyr Ala Gln Gln	Pro Ile Gly	
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Asp Leu Arg Leu Arg Thr Pro Arg	Ser Met Asn Thr Ser Trp	Pro Val	
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Pro Arg Asn Ala Thr Glu Tyr	Ser Pro Ala Cys Val Gly	Phe Asn Gln	
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Thr Glu Gly Ala Ser Glu Ala Cys	Leu Thr Leu Asn Val Val	Arg Pro	
100	105	110	
Ala Ser Ile Ala Leu Ser Glu	Ser Leu Pro Val Ala Val	Trp Ile His	
115	120	125	
Gly Gly Gly Phe Thr Ser Gly	Ser Ser Glu Lys Gln	Tyr Asn Leu	
130	135	140	
Ser Phe Ile Val Asp Gln Ser Val Gln	Met Glu Lys Pro Val Ile Ala		
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Val Ser Leu Asn Tyr Arg Leu Gln Cys	Trp Gly Phe Met Trp	Ser Lys	
165	170	175	
Glu Met Lys Glu Ala Gly Val Gly	Asn Leu Gly Leu Arg Asp	Gln Arg	
180	185	190	
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Pro Ala Gln Val Thr Ile Trp Gly	Glu Ser Ala Gly Ala Asn	Ser Val	
210	215	220	
Gly Thr His Leu Val Ala Tyr Gly	Gly Arg Asp Asp Gly	Ile Phe Arg	
225	230	235	240
Ala Ala Ile Ser Glu Ser Gly Ala Pro	Ser Val Tyr Gln Arg	Tyr Pro	
245	250	255	
Thr Pro Ala Glu Trp Gln Pro Tyr	Tyr Asp Gly Ile Val Asn	Ala Ser	
260	265	270	
Gly Cys Ser Ser Ala Thr Asp	Thr Leu Ala Cys Leu Arg	Thr Ile Pro	
275	280	285	
Thr Asn Ile Leu His Gly Ile	Phe Asp Asn Thr Ser Ile	Val Pro Met	
290	295	300	
His Ala Ile Ser Gly Leu Ser Gly	Ala Lys Phe Ile Pro Val Ile Asp		
305	310	315	320
Asp Asp Phe Ile Lys Glu Ser Ala	Thr Val Gln Leu Gln Lys Gly Asn		
325	330	335	
Phe Val Lys Val Pro Tyr Leu Ile	Gly Ala Asn Ala Asp	Glu Gly Thr	
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Ala Phe Ala Val Glu Gly Val Asn	Thr Asp Ala Glu Phe	Arg Glu Leu	
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Val Lys Gly Trp Gly Leu Asn Asn	Ala Thr Asp Ile	Leu Glu Ala	
370	375	380	
Leu Tyr Pro Asp Ile Pro Gln Ile	Gly Ile Pro Ala Ile Met	Val Gly	
385	390	395	400
Arg Pro Pro Ser Gly Tyr Gly Asn	Gln Tyr Lys Arg Val Ala	Ala Phe	
405	410	415	
Gln Gly Asp Val Asn Ile His	Ala Ala Arg Arg Leu Thr	Ser Gln Ile	
420	425	430	
Trp Ser Ser Arg Asn Ile Ser	Val Tyr Ser Tyr Met	Phe Asp Val Ile	
435	440	445	
Ser Pro Gly Tyr Gly Pro Ser Ala	Gly Ser Tyr Ala Gly	Ala Thr His	
450	455	460	
Gly Thr Asp Ile Pro Tyr Val Phe	Tyr Asn Leu Asp Gly	Leu Gly Tyr	
465	470	475	480
Asp Ser Asn Asn Lys Ser Ile Glu	Ser Ile Pro Asn Ser	Tyr Ser Arg	
485	490	495	
Met Ser Lys Ile Met Ser Arg Met	Trp Val Ser Phe Val	Thr Thr Leu	
500	505	510	

Asp	Pro	Asn	His	Ser	Gly	Gly	Met	Val	Pro	His	Pro	Ile	Pro	Met	Ile
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Ala	Gln	Cys	Gln	Thr	Arg	Ala	Glu	Ser	Thr	Ile	Phe	Leu	Gly	Thr	Asn
530							535					540			
Val	Gln	Trp	Pro	Pro	Tyr	Asn	Ile	Asp	Asn	Pro	Glu	Ile	Ile	Phe	Phe
545							550				555			560	
Asp	Thr	Asp	Val	Thr	Asn	Leu	Thr	Tyr	Thr	Trp	Pro	Ala	Gly	Leu	Tyr
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Ala	His	Trp	Trp												
							580								

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caacaacgga	gatcagtgg	ccgacatttt	atgtagaatt	aaacccgcac	acgtcggaat										420
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cgg act ctg tcc aac tgg tcc aac ctt acc gtc gag aca cgg aca ggg Arg Thr Leu Ser Asn Trp Ser Asn Leu Thr Val Glu Thr Arg Thr Gly 35 40 45	144
acg ttc att ggt atg ctc aat gac act tac cca gac gtt cga cag ttt Thr Phe Ile Gly Met Leu Asn Asp Thr Tyr Pro Asp Val Arg Gln Phe 50 55 60	192
ctg cga gtt cct tat gcc aag cct cct att ggg gat tta aga tgg ctt Leu Arg Val Pro Tyr Ala Lys Pro Pro Ile Gly Asp Leu Arg Trp Leu 65 70 75 80	240
cct cct cat cgg ctt gac aac tca agc aga aca tat gac tcc acc ttc Pro Pro His Arg Leu Asp Asn Ser Ser Arg Thr Tyr Asp Ser Thr Phe 85 90 95	288
tat ggc cca gcc tgt ccg cag tat gtt cca gca gag agc gat ttt tgg Tyr Gly Pro Ala Cys Pro Gln Tyr Val Pro Ala Glu Ser Asp Phe Trp 100 105 110	336
aat gaa tat gaa ccg gag aat ttg ctg ctc aat gtc ggc gaa agg ctc Asn Glu Tyr Glu Pro Glu Asn Leu Leu Leu Asn Val Gly Glu Arg Leu 115 120 125	384
aac cag ggc tct acg gca tgg tcc tcg tca gag gat tcg ctg tcc cta Asn Gln Gly Ser Thr Ala Trp Ser Ser Ser Glu Asp Cys Leu Ser Leu 130 135 140	432
gcg gta tgg act cca tcg tat gct aat gag aca tcc aag ctg cca gtt Ala Val Trp Thr Pro Ser Tyr Ala Asn Glu Thr Ser Lys Leu Pro Val 145 150 155 160	480
gcg ctg ttt gtc acg gga ggt ggt ggc atc aca ggg ggt atc aac att Ala Leu Phe Val Thr Gly Gly Gly Ile Thr Gly Gly Ile Asn Ile 165 170 175	528
ccg tcc cag ctg ccc tct gct tgg gta tct cgc tct cag gag cat atc Pro Ser Gln Leu Pro Ser Ala Trp Val Ser Arg Ser Gln Glu His Ile 180 185 190	576
gtt gtt acc atc aat tac cgc gtc aat att ttt ggc aat ccc aaa tcg Val Val Thr Ile Asn Tyr Arg Val Asn Ile Phe Gly Asn Pro Lys Ser 195 200 205	624
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Asn Ile Met Val Arg Leu Gln Val Ser Ser His Met Thr Arg Ala Asn	
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Ser Lys Gln Leu Trp Gly Gln Ser Gln Gly Ala Leu Leu Thr His Leu	
260 265 270	
tac acc ctc gca tgg cca gaa gag cct ctt gcc gcc aag ttc ggc gtc	864
Tyr Thr Leu Ala Trp Pro Glu Glu Pro Leu Ala Ala Lys Phe Gly Val	
275 280 285	
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Ile Ser Gln Gly Ala Ser Ala Thr Leu Asn Leu Ser Thr Thr Pro Asp	
290 295 300	
gtg tac caa gac ttt gac atc gtg gcc aag gga cta ggc tgc aat tat	960
Val Tyr Gln Asp Phe Asp Ile Val Ala Lys Gly Leu Gly Cys Asn Tyr	
305 310 315 320	
ggt gat gat gcc gag gcc gag ctg gag tgc atg cgt ggg att tcc tgg	1008
Gly Asp Asp Ala Glu Ala Glu Leu Glu Cys Met Arg Gly Ile Ser Trp	
325 330 335	
gtg cag atc gag gag tat atc aac cgc tac aat agc tct cct tct att	1056
Val Gln Ile Glu Glu Tyr Ile Asn Arg Tyr Asn Ser Ser Pro Ser Ile	
340 345 350	
gct ttc acg aac tat att ccc gat gag aaa tac atc ttc tcc gac gaa	1104
Ala Phe Thr Asn Tyr Ile Pro Asp Glu Lys Tyr Ile Phe Ser Asp Glu	
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aga cag cgt tac ctt gag cg ^g aag gtt gcc cga ggc ccg tca att cga	1152
Arg Gln Arg Tyr Leu Glu Arg Lys Val Ala Arg Gly Pro Ser Ile Arg	
370 375 380	
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Ser Asp Thr Ala Arg Glu Phe Pro Ser Thr Asn Thr Ser Val Asn	
385 390 395 400	
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Ile Glu Glu Gly Ser Asp Cys Leu Ala Val Thr Asp Leu Ala Leu	
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cgt gc ^g tcc att ggg ctc gag acc tat cgc tac tac tgg gct ggc aac	1296
Arg Ala Ser Ile Gly Leu Glu Thr Tyr Arg Tyr Tyr Trp Ala Gly Asn	
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ttc tcc aat atc agt ccc gta ccg tgg cta gga gca ttc cac tgg acc	1344
Phe Ser Asn Ile Ser Pro Val Pro Trp Leu Gly Ala Phe His Trp Thr	
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Asp Leu Leu Met Ile Phe Gly Thr Tyr Asn Leu Asp Val Gly Glu Ile	
450 455 460	
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Ser Gln Leu Glu Val Asp Thr Ser Ala Thr Met Gln Asp Tyr Leu Leu	
465 470 475 480	
gcc ttt ctg aag gac tca acc gtc acg gag acg gtc gga tgg ccg	1488
Ala Phe Leu Lys Asp Ser Ser Thr Val Ser Glu Thr Val Gly Trp Pro	
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tta tat ctg ggc aac gag acc aac gga gga ctc atc ctg gag ttc ggt	1536
Leu Tyr Leu Gly Asn Glu Thr Asn Gly Gly Leu Ile Leu Glu Phe Gly	
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Asn Gly Thr Ala Val Arg Thr Ile Thr Gly Asp Trp Leu Asp Ala Gly	
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<213> Aspergillus niger

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Thr Phe Ile Gly Met Leu Asn Asp Thr Tyr Pro Asp Val Arg Gln Phe
50 55 60
Leu Arg Val Pro Tyr Ala Lys Pro Pro Ile Gly Asp Leu Arg Trp Leu
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Pro Pro His Arg Leu Asp Asn Ser Ser Arg Thr Tyr Asp Ser Thr Phe
85 90 95
Tyr Gly Pro Ala Cys Pro Gln Tyr Val Pro Ala Glu Ser Asp Phe Trp
100 105 110
Asn Glu Tyr Glu Pro Glu Asn Leu Leu Asn Val Gly Glu Arg Leu
115 120 125
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130 135 140
Ala Val Trp Thr Pro Ser Tyr Ala Asn Glu Thr Ser Lys Leu Pro Val
145 150 155 160
Ala Leu Phe Val Thr Gly Gly Gly Ile Thr Gly Gly Ile Asn Ile
165 170 175
Pro Ser Gln Leu Pro Ser Ala Trp Val Ser Arg Ser Gln Glu His Ile
180 185 190
Val Val Thr Ile Asn Tyr Arg Val Asn Ile Phe Gly Asn Pro Lys Ser
195 200 205
Arg Ala Leu Asn Asp Thr Ser Leu Thr Leu Met Asp Val Arg Ala Ala
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225 230 235 240
Asn Ile Met Val Arg Leu Gln Val Ser Ser His Met Thr Arg Ala Asn
245 250 255
Ser Lys Gln Leu Trp Gly Gln Ser Gln Gly Ala Leu Leu Thr His Leu
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Tyr Thr Leu Ala Trp Pro Glu Glu Pro Leu Ala Ala Lys Phe Gly Val
275 280 285
Ile Ser Gln Gly Ala Ser Ala Thr Leu Asn Leu Ser Thr Thr Pro Asp
290 295 300
Val Tyr Gln Asp Phe Asp Ile Val Ala Lys Gly Leu Gly Cys Asn Tyr
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Gly Asp Asp Ala Glu Ala Glu Leu Glu Cys Met Arg Gly Ile Ser Trp
325 330 335
Val Gln Ile Glu Glu Tyr Ile Asn Arg Tyr Asn Ser Ser Pro Ser Ile
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370 375 380
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385 390 395 400
Ile Glu Glu Gly Glu Ser Asp Cys Leu Ala Val Thr Asp Leu Ala Leu
405 410 415
Arg Ala Ser Ile Gly Leu Glu Thr Tyr Arg Tyr Tyr Trp Ala Gly Asn
420 425 430
Phe Ser Asn Ile Ser Pro Val Pro Trp Leu Gly Ala Phe His Trp Thr
435 440 445

Asp	Leu	Leu	Met	Ile	Phe	Gly	Thr	Tyr	Asn	Leu	Asp	Val	Gly	Glu	Ile
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Ser	Gln	Leu	Glu	Val	Asp	Thr	Ser	Ala	Thr	Met	Gln	Asp	Tyr	Leu	Leu
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Leu	Tyr	Leu	Gly	Asn	Glu	Thr	Asn	Gly	Gly	Leu	Ile	Leu	Glu	Phe	Gly
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Asn	Gly	Thr	Ala	Val	Arg	Thr	Ile	Thr	Gly	Asp	Trp	Leu	Asp	Ala	Gly
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gcattgagaac gggttcgaac gttcttggc caccgggttgc gctgtatatt ctccggccac	600
gctgtctgtc cccctgtatgg gaaacccctcg gatcagcgat catcaggccg gttggctat	660
agaatagggg ctttgcgtc ttgatgccta aaatgcaggat ctcatagcaaa gatccacagc	720
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Trp Ala Thr Pro Val Gln Arg Asp Ala Ala Pro Thr Val Thr Ile Ala						
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cat cca tcg gcc acc gtc att gga aaa tct ggc aat gtc gag agc ttc						144
His Pro Ser Ala Thr Val Ile Gly Lys Ser Gly Asn Val Glu Ser Phe						
35 40 45						
aac aat att ccc ttt gcg cag gcc ccc aca ggc tcg ctg cgt ctg aag						192
Asn Asn Ile Pro Phe Ala Gln Ala Pro Thr Gly Ser Leu Arg Leu Lys						
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ccc cca caa ccc ttg gaa act gcc ctc ggc act gtt cag gcc aca gga						240
Pro Pro Gln Pro Leu Glu Thr Ala Leu Gly Thr Val Gln Ala Thr Gly						
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gcc tcg caa tcg tgt ccg cag atg tac ttc acc acg gat gag agc gaa						288
Ala Ser Gln Ser Cys Pro Gln Met Tyr Phe Thr Thr Asp Glu Ser Glu						
85 90 95						
ttc ccg aca tcg gtc att ggc ctc ctc gct gat ctc cct ttg gta cag						336
Phe Pro Thr Ser Val Ile Gly Leu Leu Ala Asp Leu Pro Leu Val Gln						
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tcg gct acc aat gct ctc gag gat tgc ctg aac att gac att cgg cgt						384
Ser Ala Thr Asn Ala Leu Glu Asp Cys Leu Asn Ile Asp Ile Arg Arg						
115 120 125						
ccg gcc ggg acc acc gcg gac tcg aag ctg cct gtg ctg gtc tgg atc						432
Pro Ala Gly Thr Thr Ala Asp Ser Lys Leu Pro Val Leu Val Trp Ile						
130 135 140						
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Phe Gly Gly Phe Glu Leu Gly Ser Lys Ala Met Tyr Asp Gly Thr						
145 150 155 160						
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Thr Met Val Ser Ser Ile Asp Lys Asn Met Pro Ile Val Phe Val						
165 170 175						
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Ala Met Asn Tyr Arg Val Gly Gly Phe Phe Leu Pro Gly Lys Glu						

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Ile Leu Glu Asp Gly Ser Ala Asn Leu Gly Leu Leu Asp Gln Arg Leu			
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Ala Leu Gln Trp Val Ala Asp Asn Ile Glu Ala Phe Gly Gly Asp Pro			
210	215	220	
gac aag gtg acg att tgg gga gaa tca gca gga gcc att tcc gtt ttt			720
Asp Lys Val Thr Ile Trp Gly Glu Ser Ala Gly Ala Ile Ser Val Phe			
225	230	235	240
gat cag atg atc ttg tac gac gga aac atc act tac aag gat aag ccc			768
Asp Gln Met Ile Leu Tyr Asp Gly Asn Ile Thr Tyr Lys Asp Lys Pro			
245	250	255	
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Leu Phe Arg Gly Ala Ile Met Asp Ser Gly Ser Val Val Pro Ala Asp			
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ccc gtc gat ggg gtc aag gga cag caa gta tat gat gcg gta gtg gaa			864
Pro Val Asp Gly Val Lys Gly Gln Gln Val Tyr Asp Ala Val Val Glu			
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Ser Ala Gly Cys Ser Ser Asn Asp Thr Leu Ala Cys Leu Arg Glu			
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Leu Asp Tyr Thr Asp Phe Leu Asn Ala Ala Asn Ser Val Pro Gly Ile			
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tta agc tac cat tct gtg gcg tta tca tat gtg cct cga ccg gac ggg			1008
Leu Ser Tyr His Ser Val Ala Leu Ser Tyr Val Pro Arg Pro Asp Gly			
325	330	335	
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Thr Ala Leu Ser Ala Ser Pro Asp Val Leu Gly Lys Ala Gly Lys Tyr			
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Ala Arg Val Pro Phe Ile Val Gly Asp Gln Glu Asp Glu Gly Thr Leu			
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Tyr Leu Ala Ser Tyr Phe Tyr Asp Ala Ser Arg Glu Gln Leu Glu			
385	390	395	400
gaa cta gtg gcc ctg tac cca gac acc acc acg tac ggg tct ccg ttc			1248
Glu Leu Val Ala Leu Tyr Pro Asp Thr Thr Tyr Gly Ser Pro Phe			
405	410	415	
agg aca ggc gcg gcc aac aac tgg tat ccg caa ttt aag cga ttg gcc			1296
Arg Thr Gly Ala Ala Asn Asn Trp Tyr Pro Gln Phe Lys Arg Leu Ala			
420	425	430	
gcc att ctc ggc gac ttg gtc ttc acc att acc cgg cggt gca ttc ctc			1344
Ala Ile Leu Gly Asp Leu Val Phe Thr Ile Thr Arg Arg Ala Phe Leu			
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Ser Tyr Ala Glu Glu Ile Ser Pro Asp Leu Pro Asn Trp Ser Tyr Leu			
450	455	460	
gcg acc tat gac tat ggc acc cca gtt ctg ggg acc ttc cac gga agt			1440
Ala Thr Tyr Asp Tyr Gly Thr Pro Val Leu Gly Thr Phe His Gly Ser			
465	470	475	480
gac ctg ctg cag gtg ttc tat ggg atc aag cca aac tat gca gct agt			1488
Asp Leu Leu Gln Val Phe Tyr Gly Ile Lys Pro Asn Tyr Ala Ala Ser			
485	490	495	
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Ser Ser His Thr Tyr Tyr Leu Ser Phe Val Tyr Thr Leu Asp Pro Asn			

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Gln Leu Met Asn Phe Gly Ala Asn Asp Ala Ser Leu Leu Thr Asp Asp			
530	535	540	
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His Ile			1689

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Pro Pro Gln Pro Leu Glu Thr Ala Leu Gly Thr Val Gln Ala Thr Gly			
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Ala Ser Gln Ser Cys Pro Gln Met Tyr Phe Thr Thr Asp Glu Ser Glu			
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325	330	335
Thr Ala Leu Ser Ala Ser Pro Asp Val	Leu Gly Lys Ala Gly Lys Tyr	
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Ala Arg Val Pro Phe Ile Val Gly Asp Gln Glu Asp Glu Gly Thr Leu		
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Phe Ala Leu Phe Gln Ser Asn Ile Thr Thr Ile Asp Glu Val Val Asp		
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Tyr Leu Ala Ser Tyr Phe Phe Tyr Asp Ala Ser Arg Glu Gln Leu Glu		
385	390	395
Glu Leu Val Ala Leu Tyr Pro Asp Thr Thr Tyr Gly Ser Pro Phe		
405	410	415
Arg Thr Gly Ala Ala Asn Asn Trp Tyr Pro Gln Phe Lys Arg Leu Ala		
420	425	430
Ala Ile Leu Gly Asp Leu Val Phe Thr Ile Thr Arg Arg Ala Phe Leu		
435	440	445
Ser Tyr Ala Glu Glu Ile Ser Pro Asp Leu Pro Asn Trp Ser Tyr Leu		
450	455	460
Ala Thr Tyr Asp Tyr Gly Thr Pro Val Leu Gly Thr Phe His Gly Ser		
465	470	475
Asp Leu Leu Gln Val Phe Tyr Gly Ile Lys Pro Asn Tyr Ala Ala Ser		
485	490	495
Ser Ser His Thr Tyr Tyr Leu Ser Phe Val Tyr Thr Leu Asp Pro Asn		
500	505	510
Ser Asn Arg Gly Glu Tyr Ile Glu Trp Pro Gln Trp Lys Glu Ser Arg		
515	520	525
Gln Leu Met Asn Phe Gly Ala Asn Asp Ala Ser Leu Leu Thr Asp Asp		
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His Ile		560

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ggtgccatt	gcacctcca	ccagaggcac	caacttggcg	gggatctatg	acatcgata	1620
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tatcgtag	ccggaaata	atctaacggt	gattgcatcg	cggtccgacg	aattggtcac	1800
cccaaccacc	acctccctcg	tgcatgaaga	tgggtgacc	aatgaatggg	tgcaagacac	1860
ttgtcctcta	gaccctgtcg	gtcatatcgg	tgaggcatac	gatctgaacg	tctggatatt	1920
ggtcaaaaaac	gcctggact	ctacgcccgg	gcgtgagttc	gtctgctcgc	tggatctcc	1980
cggcaggta	gactatcatc	ttctgaaaat	ttgtatataa	gcatttatat	ttggataaccc	2040
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1															15	
tta	ggc	tac	agc	atc	aac	gac	ttc	tcc	tgc	aat	agc	acc	gaa	cac	ccg	96
Leu	Gly	Tyr	Ser	Ile	Asn	Asp	Phe	Ser	Cys	Asn	Ser	Thr	Glu	His	Pro	
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aat	cca	gtt	gtg	ctc	cta	cat	ggg	cta	ggc	acc	tac	tac	gaa	gac	144	
Asn	Pro	Val	Val	Leu	Leu	His	Gly	Leu	Gly	Ala	Thr	Tyr	Tyr	Glu	Asp	
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Leu	Asn	Tyr	Leu	Gln	Gly	Trp	Leu	Gln	Thr	Gln	Gly	Tyr	Cys	Thr	Tyr	
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Ala	Lys	Thr	Tyr	Gly	Ala	Tyr	Glu	Gly	Phe	Pro	Phe	Val	Gly	Gly	Leu	
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aag	gcc	atc	gcc	gaa	tcg	gcc	acg	gaa	atc	gcc	gcg	tac	atc	cgc	gag	288
Lys	Ala	Ile	Ala	Glu	Ser	Ala	Thr	Glu	Ile	Ala	Ala	Tyr	Ile	Arg	Glu	
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gtg	aaa	gaa	aag	acg	ggc	gcc	gac	aag	att	gac	ctt	gtc	ggc	cac	tcc	336
Val	Lys	Glu	Lys	Thr	Gly	Ala	Asp	Lys	Ile	Asp	Leu	Val	Gly	His	Ser	
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gaa	ggc	gcc	ttc	cag	acc	ctc	tac	gtc	cct	aag	ttc	gag	gat	ggt	atc	384
Glu	Gly	Ala	Phe	Gln	Thr	Leu	Tyr	Val	Pro	Lys	Phe	Glu	Asp	Gly	Ile	
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tcg	gag	atg	ctg	gat	aag	ctg	gtg	gcc	att	gca	cct	ccc	acc	aga	ggc	432
Ser	Glu	Met	Leu	Asp	Lys	Leu	Val	Ala	Ile	Ala	Pro	Pro	Thr	Arg	Gly	
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Thr	Asn	Leu	Ala	Gly	Ile	Tyr	Asp	Ile	Ala	Tyr	Val	Leu	Gly	Asn	Leu	
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tcg	cgc	gat	ctg	ata	ggc	gac	gtc	ctg	gat	acc	gtg	ggc	tgc	gcc	gcc	528
Ser	Arg	Asp	Leu	Ile	Gly	Asp	Val	Leu	Asp	Thr	Val	Gly	Cys	Ala	Ala	
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tgt	gat	gat	ctg	ggt	ccg	gat	gga	gca	gcg	att	gac	cgc	ttg	aac	gat	576
Cys	Asp	Asp	Leu	Gly	Pro	Asp	Gly	Ala	Ala	Ile	Asp	Arg	Leu	Asn	Asp	
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ggc gag cct atc gtg cag ccg gga aat aat cta acg gtg att gca tcg	624
Gly Glu Pro Ile Val Gln Pro Gly Asn Asn Leu Thr Val Ile Ala Ser	
195 200 205	
cgg tcc gac gaa ttg gtc acc cca acc acc acc tcc ttc gtg cat gaa	672
Arg Ser Asp Glu Leu Val Thr Pro Thr Thr Ser Phe Val His Glu	
210 215 220	
gat ggg gtg acc aat gaa tgg gtg caa gac act tgt cct cta gac cct	720
Asp Gly Val Thr Asn Glu Trp Val Gln Asp Thr Cys Pro Leu Asp Pro	
225 230 235 240	
gtc ggt cat atc ggt gag gca tac gat ctg aac gtc tgg aat ttg gtc	768
Val Gly His Ile Gly Glu Ala Tyr Asp Leu Asn Val Trp Asn Leu Val	
245 250 255	
aaa aac gcc ttg gac tct acg ccg aag cgt gag ttc gtc tgc tcg ctg	816
Lys Asn Ala Leu Asp Ser Thr Pro Lys Arg Glu Phe Val Cys Ser Leu	
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Gly Ser Pro Gly Arg	
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Asn Pro Val Val Leu Leu His Gly Leu Gly Ala Thr Tyr Tyr Glu Asp	
35 40 45	
Leu Asn Tyr Leu Gln Gly Trp Leu Gln Thr Gln Gly Tyr Cys Thr Tyr	
50 55 60	
Ala Lys Thr Tyr Gly Ala Tyr Glu Gly Phe Pro Phe Val Gly Gly Leu	
65 70 75 80	
Lys Ala Ile Ala Glu Ser Ala Thr Glu Ile Ala Ala Tyr Ile Arg Glu	
85 90 95	
Val Lys Glu Lys Thr Gly Ala Asp Lys Ile Asp Leu Val Gly His Ser	
100 105 110	
Glu Gly Ala Phe Gln Thr Leu Tyr Val Pro Lys Phe Glu Asp Gly Ile	
115 120 125	
Ser Glu Met Leu Asp Lys Leu Val Ala Ile Ala Pro Pro Thr Arg Gly	
130 135 140	
Thr Asn Leu Ala Gly Ile Tyr Asp Ile Ala Tyr Val Leu Gly Asn Leu	
145 150 155 160	
Ser Arg Asp Leu Ile Gly Asp Val Leu Asp Thr Val Gly Cys Ala Ala	
165 170 175	
Cys Asp Asp Leu Gly Pro Asp Gly Ala Ala Ile Asp Arg Leu Asn Asp	
180 185 190	
Gly Glu Pro Ile Val Gln Pro Gly Asn Asn Leu Thr Val Ile Ala Ser	
195 200 205	
Arg Ser Asp Glu Leu Val Thr Pro Thr Thr Ser Phe Val His Glu	
210 215 220	
Asp Gly Val Thr Asn Glu Trp Val Gln Asp Thr Cys Pro Leu Asp Pro	
225 230 235 240	
Val Gly His Ile Gly Glu Ala Tyr Asp Leu Asn Val Trp Asn Leu Val	
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Lys Asn Ala Leu Asp Ser Thr Pro Lys Arg Glu Phe Val Cys Ser Leu	
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<222> (1)..(1257)

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gca acg gcg ctg ccc acg ccc ggc tcc acg ccc atc ccg ccc agc cag      96
Ala Thr Ala Leu Pro Thr Pro Gly Ser Thr Pro Ile Pro Pro Ser Gln
20          25          30
qat ccc tgg tac agt qcg ccc qaq qac ttc qaq qaq qct qat ccc qgt      144

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Asp Pro Trp Tyr Ser Ala Pro Glu Gly Phe Glu Glu Ala Asp Pro Gly		
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gcc atc ctg cgc gtg cg ^g ccc g ^c ccc g ^c aac ttg acc gtg gta gtg		192
Ala Ile Leu Arg Val Arg Pro Ala Pro Gly Asn Leu Thr Val Val Val		
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ggc aat g ^c g ^c tcg g ^c g ^c tac aac atc ctc tac cgc act aca gac agt		240
Gly Asn Ala Ser Ala Ala Tyr Asn Ile Leu Tyr Arg Thr Thr Asp Ser		
65	70	75
cag tac aag ccc tcc tgg gct gtg acc acc ctg ctg gtg ccc ccc gtg		288
Gln Tyr Lys Pro Ser Trp Ala Val Thr Thr Leu Leu Val Pro Pro Val		
85	90	95
gcc gcc tcc gcc gtc aac cag agt gtc ctg ctc tcc cac cag atc		336
Ala Ala Ser Ala Ala Val Asn Gln Ser Val Leu Leu Ser His Gln Ile		
100	105	110
gcc tac gat tcg ttc gac gtc aat g ^c agt ccc agc tac gcc atg tac		384
Ala Tyr Asp Ser Phe Asp Val Asn Ala Ser Pro Ser Tyr Ala Met Tyr		
115	120	125
acc agc cog ccc tcc gat att atc ctc gcc ctg cag cgc ggc tgg ttc		432
Thr Ser Pro Pro Ser Asp Ile Ile Leu Ala Leu Gln Arg Gly Trp Phe		
130	135	140
gtt aac gtc ccc gat tac gag g ^c ccc aat g ^c tct ttc acc gcc ggt		480
Val Asn Val Pro Asp Tyr Glu Gly Pro Asn Ala Ser Phe Thr Ala Gly		
145	150	155
160		
gtg cag tcc ggc cat gcc acc ctc gac tcg gtc cgc agc gtg ctc gcc		528
Val Gln Ser Gly His Ala Thr Leu Asp Ser Val Arg Ser Val Leu Ala		
165	170	175
tcc gga ttc ggc ctg aac gag gac g ^c cag tac gct ctg tgg ggt tac		576
Ser Gly Phe Gly Leu Asn Glu Asp Ala Gln Tyr Ala Leu Trp Gly Tyr		
180	185	190
tct ggc ggt gcc ttg gcc agc gaa tgg gct gct gaa ctg cag atg caa		624
Ser Gly Gly Ala Leu Ala Ser Glu Trp Ala Ala Glu Leu Gln Met Gln		
195	200	205
tac gct ccc gag ttg aac att g ^c ggt ctg gcc gtg ggt ggt ctc act		672
Tyr Ala Pro Glu Leu Asn Ile Ala Gly Leu Ala Val Gly Gly Leu Thr		
210	215	220
ccc aat gtt acc agc gtc atg gac acg gtg acc ctg acc atc agt gcg		720
Pro Asn Val Thr Ser Val Met Asp Thr Val Thr Ser Thr Ile Ser Ala		
225	230	235
240		
gga ctc atc ccc gcc gcc ctg ggt ctg tcg agc cag cac ccc gag		768
Gly Leu Ile Pro Ala Ala Leu Gly Leu Ser Ser Gln His Pro Glu		
245	250	255
acc tac gag ttc atc ctc agc cag ctc aag acg acg gga ccc tac aac		816
Thr Tyr Glu Phe Ile Leu Ser Gln Leu Lys Thr Thr Gly Pro Tyr Asn		
260	265	270
cgc aca gga ttc cta gcc gcc aag gac ctg acc ctg tcc gag g ^c gag		864
Arg Thr Gly Phe Leu Ala Ala Lys Asp Leu Thr Leu Ser Glu Ala Glu		
275	280	285
gtc ttc tac gcc ttc cag aac atc ttc gat tac ttt gtc aac gga tcg		912
Val Phe Tyr Ala Phe Gln Asn Ile Phe Asp Tyr Phe Val Asn Gly Ser		
290	295	300
g ^c acg ttc cag g ^c gag gtg gtg cag aag g ^c ctg aac cag gac gga		960
Ala Thr Phe Gln Ala Glu Val Val Gln Lys Ala Leu Asn Gln Asp Gly		
305	310	315
320		
tac atg ggc tac cat ggg ttc ccg cag atg ccg gtg ctc g ^c tac aag		1008
Tyr Met Gly Tyr His Gly Phe Pro Gln Met Pro Val Leu Ala Tyr Lys		
325	330	335
gct att cac gat gag atc agt ccc atc cag gat acg gat cgc gtg atc		1056
Ala Ile His Asp Glu Ile Ser Pro Ile Gln Asp Thr Asp Arg Val Ile		
340	345	350
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Lys Arg Tyr Cys Gly Leu Gly Leu Asn Ile Leu Tyr Glu Arg Asn Thr		

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atc ggt ggc cac tcg gca gag cag gtg aat ggc aac gcc agg gcg tgg			
Ile Gly Gly His Ser Ala Glu Gln Val Asn Gly Asn Ala Arg Ala Trp			
370	375	380	
aac tgg ttg acg agc att ttc gac gga acg tat gcg cag cag tac aag			
Asn Trp Leu Thr Ser Ile Phe Asp Gly Thr Tyr Ala Gln Gln Tyr Lys			
385	390	395	400
acc gag ggg tgc acg atc cgc aat gtc act ctg aac acg act tcc tcc			
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gtt tat tag			
Val Tyr			1257

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Ala Ile Leu Arg Val Arg Pro Ala Pro Gly Asn Leu Thr Val Val Val			
50	55	60	
Gly Asn Ala Ser Ala Ala Tyr Asn Ile Leu Tyr Arg Thr Thr Asp Ser			
65	70	75	80
Gln Tyr Lys Pro Ser Trp Ala Val Thr Thr Leu Leu Val Pro Pro Val			
85	90	95	
Ala Ala Ser Ala Ala Val Asn Gln Ser Val Leu Leu Ser His Gln Ile			
100	105	110	
Ala Tyr Asp Ser Phe Asp Val Asn Ala Ser Pro Ser Tyr Ala Met Tyr			
115	120	125	
Thr Ser Pro Pro Ser Asp Ile Ile Leu Ala Leu Gln Arg Gly Trp Phe			
130	135	140	
Val Asn Val Pro Asp Tyr Glu Gly Pro Asn Ala Ser Phe Thr Ala Gly			
145	150	155	160
Val Gln Ser Gly His Ala Thr Leu Asp Ser Val Arg Ser Val Leu Ala			
165	170	175	
Ser Gly Phe Gly Leu Asn Glu Asp Ala Gln Tyr Ala Leu Trp Gly Tyr			
180	185	190	
Ser Gly Gly Ala Leu Ala Ser Glu Trp Ala Ala Glu Leu Gln Met Gln			
195	200	205	
Tyr Ala Pro Glu Leu Asn Ile Ala Gly Leu Ala Val Gly Gly Leu Thr			
210	215	220	
Pro Asn Val Thr Ser Val Met Asp Thr Val Thr Ser Thr Ile Ser Ala			
225	230	235	240
Gly Leu Ile Pro Ala Ala Ala Leu Gly Leu Ser Ser Gln His Pro Glu			
245	250	255	
Thr Tyr Glu Phe Ile Leu Ser Gln Leu Lys Thr Thr Gly Pro Tyr Asn			
260	265	270	
Arg Thr Gly Phe Leu Ala Ala Lys Asp Leu Thr Leu Ser Glu Ala Glu			
275	280	285	
Val Phe Tyr Ala Phe Gln Asn Ile Phe Asp Tyr Phe Val Asn Gly Ser			
290	295	300	
Ala Thr Phe Gln Ala Glu Val Val Gln Lys Ala Leu Asn Gln Asp Gly			
305	310	315	320
Tyr Met Gly Tyr His Gly Phe Pro Gln Met Pro Val Leu Ala Tyr Lys			

325	330	335
Ala Ile His Asp Glu Ile Ser Pro Ile Gln Asp Thr Asp Arg Val Ile		
340	345	350
Lys Arg Tyr Cys Gly Leu Gly Leu Asn Ile Leu Tyr Glu Arg Asn Thr		
355	360	365
Ile Gly Gly His Ser Ala Glu Gln Val Asn Gly Asn Ala Arg Ala Trp		
370	375	380
Asn Trp Leu Thr Ser Ile Phe Asp Gly Thr Tyr Ala Gln Gln Tyr Lys		
385	390	395
Thr Glu Gly Cys Thr Ile Arg Asn Val Thr Leu Asn Thr Thr Ser Ser		
405	410	415
Val Tyr		

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<211> 2809

<212> DNA

<213> Aspergillus niger

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cacactatca gggcttgggt acatgagcga agtagtccca acaatcaaac aatcatccaa	240
actccaagcc aaatgccagc gaaaacaaca aaaggcacaac atgatgttac agtgcactag	300
ggaaaccaat ctgtgtcacc atcactcagg acaccagata taacgaaccc ccctcacaga	360
ccacgagtct tctccggatc catctgcacc tcatcaccgc taatttcctt gaccgtctca	420
aacgcggct tgccccata tagctgctgg gacgagctgg agccgcgc ttcgcgtc	480
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<213> Aspergillus niger

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gcc ctt ttt ggg tcg ctg att ttg gta ttg ctg gaa tgg gtt ata cat	96
Ala Leu Phe Gly Ser Leu Ile Leu Val Leu Leu Glu Trp Val Ile His	
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att atc aca ttc tgt ctg cct gaa cct gtt att aag ttc tgt tac gat	144
Ile Ile Thr Phe Cys Leu Pro Glu Pro Val Ile Lys Phe Cys Tyr Asp	
35 40 45	

cga tcc aag act atc ttc aac gcc ttc att cct ccc gat gac ccc gct	192
Arg Ser Lys Thr Ile Phe Asn Ala Phe Ile Pro Pro Asp Asp Pro Ala	
50 55 60	

aag cgc ggt aaa gaa gag aaa att gct gcg tcg gtt gct ctg gcg tcg	240
Lys Arg Gly Lys Glu Glu Lys Ile Ala Ala Ser Val Ala Leu Ala Ser	
65 70 75 80	

gac ttc acg gat ata tgc gcg ctg ttc gga tat gag gcg gag gaa cat	288
Asp Phe Thr Asp Ile Cys Ala Leu Phe Gly Tyr Glu Ala Glu Glu His	
85 90 95	

atc gtc cag aca ggg gat ggc tat ctg ctt ggt ctg cac cga ctg ccc	336
Ile Val Gln Thr Gly Asp Gly Tyr Leu Leu Gly Leu His Arg Leu Pro	
100 105 110	

tat cgg aaa gga gag gag ggg agg aag atc aac cag ggc gaa ggg agc	384
Tyr Arg Lys Gly Glu Gly Arg Lys Ile Asn Gln Gly Glu Gly Ser	
115 120 125	

atc aag aag aag gtc gtc tat ctc cac cat ggt ctc atg atg tgc agt	432
Ile Lys Lys Val Val Tyr Leu His His Gly Leu Met Met Cys Ser	
130 135 140	

gaa gtc tgg atc tgt ctg tca gag gag cag cga tgc ctt ccg ttt caa	480
Glu Val Trp Ile Cys Leu Ser Glu Glu Gln Arg Cys Leu Pro Phe Gln	
145 150 155 160	

tta gtc gaa agg ggc tat gac gtg tgg ttg ggg aac aat aga gga aac	528
Leu Val Glu Arg Gly Tyr Asp Val Trp Leu Gly Asn Asn Arg Gly Asn	
165 170 175	

aag tac tcg aag aag tcc gtc aag cat tcg ccc ctg tcg aac gag ttc	576
Lys Tyr Ser Lys Lys Ser Val Lys His Ser Pro Leu Ser Asn Glu Phe	
180 185 190	

tgg gac ttt tcg atc gat cag ttc tcg ttc cat gat atc cca gac agc	624
Trp Asp Phe Ser Ile Asp Gln Phe Ser Phe His Asp Ile Pro Asp Ser	
195 200 205	

atc aag tat atc ctg gaa gtg aca ggg cag ccc tcc ctg tca tac gtg	672
Ile Tyr Ile Leu Glu Val Thr Gly Gln Pro Ser Leu Ser Tyr Val	

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Gly Phe Ser Gln Gly Thr Ala Gln Ala Phe Ala Thr Leu Ser Ile His			
225	230	235	240
cct ttg ttg aat cag aag atc gat gtc ttt gtg gct ctc gcg ccg gca			768
Pro Leu Leu Asn Gln Lys Ile Asp Val Phe Val Ala Leu Ala Pro Ala			
245	250	255	
atg gct ccg aca ggt ctt cca aat cat ctc gtg gac tcg ctc atg aag			816
Met Ala Pro Thr Gly Leu Pro Asn His Leu Val Asp Ser Leu Met Lys			
260	265	270	
gct tcg ccg aac ttc ctg ttt ctg ctg ttt ggc aga cgc agc atc ctt			864
Ala Ser Pro Asn Phe Leu Phe Leu Phe Gly Arg Arg Ser Ile Leu			
275	280	285	
agc tca acg acg atg tgg cag aca att ctc tac ccg cct atc ttt gtt			912
Ser Ser Thr Thr Met Trp Gln Thr Ile Leu Tyr Pro Pro Ile Phe Val			
290	295	300	
tgg atc atc gac acg tca ctt cgc ggc ctg ttc aat tgg agg tgc aag			960
Trp Ile Ile Asp Thr Ser Leu Arg Gly Leu Phe Asn Trp Arg Cys Lys			
305	310	315	320
aac atc agc cgc tgg cag aag ctg gca ggg tac ctg cat ctg ttt tcc			1008
Asn Ile Ser Arg Trp Gln Lys Leu Ala Gly Tyr Leu His Leu Phe Ser			
325	330	335	
ttc act agc acc aag tcg gtc cat tgg ttc cag att att cgg cac			1056
Phe Thr Ser Lys Ser Val Val His Trp Phe Gln Ile Ile Arg His			
340	345	350	
cgg aat ttc cag ttc tac gat gac gaa atc cat gcc ccg ctc agt att			1104
Arg Asn Phe Gln Phe Tyr Asp Asp Glu Ile His Ala Pro Leu Ser Ile			
355	360	365	
gtg gcc agt gag cga ttt tac aag ccg gtc aag tac ccg act aag aac			1152
Val Ala Ser Glu Arg Phe Tyr Lys Pro Val Lys Tyr Pro Thr Lys Asn			
370	375	380	
att aag acg ccc att gtc ctg ttg tat ggc ggt agc gat agt ctc gtt			1200
Ile Lys Thr Pro Ile Val Leu Leu Tyr Gly Gly Ser Asp Ser Leu Val			
385	390	395	400
gat atc aac gtg atg ttg tcc gag ctc cct cgc ggg acc gtg gcg aag			1248
Asp Ile Asn Val Met Leu Ser Glu Leu Pro Arg Gly Thr Val Ala Lys			
405	410	415	
gaa atc ccg cag tat gag cat tta gat ttc ttg tgg gcg cgt gat gtg			1296
Glu Ile Pro Gln Tyr Glu His Leu Asp Phe Leu Trp Ala Arg Asp Val			
420	425	430	
gac caa ttg gta ttc aac cat gtc ttc gaa gcg ctg gag ccg tac agc			1344
Asp Gln Leu Val Phe Asn His Val Phe Glu Ala Leu Glu Arg Tyr Ser			
435	440	445	
tcg gag aat cag aaa ggg aca ttg atg gag aag gtt aat ggt gcc gcg			1392
Ser Glu Asn Gln Lys Gly Thr Leu Met Glu Lys Val Asn Gly Ala Ala			
450	455	460	
ggc aca tat gta ccg aca taa			1413
Gly Thr Tyr Val Pro Thr			
465	470		

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<212> PRT
<213> Aspergillus niger

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Ala Leu Phe Gly Ser Leu Ile Leu Val Leu Leu Glu Trp Val Ile His
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Ile	Ile	Thr	Phe	Cys	Leu	Pro	Glu	Pro	Val	Ile	Lys	Phe	Cys	Tyr	Asp
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Arg	Ser	Lys	Thr	Ile	Phe	Asn	Ala	Phe	Ile	Pro	Pro	Asp	Asp	Pro	Ala
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Lys	Arg	Gly	Lys	Glu	Glu	Lys	Ile	Ala	Ala	Ser	Val	Ala	Leu	Ala	Ser
65							70			75					80
Asp	Phe	Thr	Asp	Ile	Cys	Ala	Leu	Phe	Gly	Tyr	Glu	Ala	Glu	Glu	His
								85		90					95
Ile	Val	Gln	Thr	Gly	Asp	Gly	Tyr	Leu	Leu	Gly	Leu	His	Arg	Leu	Pro
								100		105				110	
Tyr	Arg	Lys	Gly	Glu	Glu	Gly	Arg	Lys	Ile	Asn	Gln	Gly	Glu	Gly	Ser
								115		120				125	
Ile	Lys	Lys	Val	Val	Tyr	Leu	His	His	Gly	Leu	Met	Met	Cys	Ser	
								130		135				140	
Glu	Val	Trp	Ile	Cys	Leu	Ser	Glu	Glu	Gln	Arg	Cys	Leu	Pro	Phe	Gln
								145		150				160	
Leu	Val	Glu	Arg	Gly	Tyr	Asp	Val	Trp	Leu	Gly	Asn	Asn	Arg	Gly	Asn
								165		170				175	
Lys	Tyr	Ser	Lys	Ser	Val	Lys	His	Ser	Pro	Leu	Ser	Asn	Glu	Phe	
								180		185				190	
Trp	Asp	Phe	Ser	Ile	Asp	Gln	Phe	Ser	Phe	His	Asp	Ile	Pro	Asp	Ser
								195		200				205	
Ile	Lys	Tyr	Ile	Leu	Glu	Val	Thr	Gly	Gln	Pro	Ser	Leu	Ser	Tyr	Val
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Gly	Phe	Ser	Gln	Gly	Thr	Ala	Gln	Ala	Phe	Ala	Thr	Leu	Ser	Ile	His
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Pro	Leu	Leu	Asn	Gln	Lys	Ile	Asp	Val	Phe	Val	Ala	Leu	Ala	Pro	Ala
								245		250				255	
Met	Ala	Pro	Thr	Gly	Leu	Pro	Asn	His	Leu	Val	Asp	Ser	Leu	Met	Lys
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Ala	Ser	Pro	Asn	Phe	Leu	Phe	Leu	Leu	Phe	Gly	Arg	Arg	Ser	Ile	Leu
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Ser	Ser	Thr	Thr	Met	Trp	Gln	Thr	Ile	Leu	Tyr	Pro	Pro	Ile	Phe	Val
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Trp	Ile	Ile	Asp	Thr	Ser	Leu	Arg	Gly	Leu	Phe	Asn	Trp	Arg	Cys	Lys
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Phe	Thr	Ser	Thr	Lys	Ser	Val	Val	His	Trp	Phe	Gln	Ile	Ile	Arg	His
								340		345				350	
Arg	Asn	Phe	Gln	Phe	Tyr	Asp	Asp	Glu	Ile	His	Ala	Pro	Leu	Ser	Ile
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Asp	Ile	Asn	Val	Met	Leu	Ser	Glu	Leu	Pro	Arg	Gly	Thr	Val	Ala	Lys
								405		410				415	
Glu	Ile	Pro	Gln	Tyr	Glu	His	Leu	Asp	Phe	Leu	Trp	Ala	Arg	Asp	Val
								420		425				430	
Asp	Gln	Leu	Val	Phe	Asn	His	Val	Phe	Glu	Ala	Leu	Glu	Arg	Tyr	Ser
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Ser	Glu	Asn	Gln	Lys	Gly	Thr	Leu	Met	Glu	Lys	Val	Asn	Gly	Ala	Ala
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Gly	Thr	Tyr	Val	Pro	Thr										
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<213> Aspergillus niger

<210> 23
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cta cta ttc gcc cag caa ctt gcc tct cac cca acc gag cag att caa	96	
Leu Leu Phe Ala Gln Gln Leu Ala Ser His Pro Thr Glu Gln Ile Gln		
20 25 30		
gcc att ctg gct ccg tgg gtc ccg gcc gca cta caa gat gtc gtg ctc	144	
Ala Ile Leu Ala Pro Trp Val Pro Ala Ala Leu Gln Asp Val Val Leu		
35 40 45		
tat aat cga cct cgc gtc ata atc ccc cag ggc act gtc gtc ggc acg	192	
Tyr Asn Arg Pro Arg Val Ile Ile Pro Gln Gly Thr Val Val Gly Thr		
50 55 60		
acc ttg aca gac acg ctc aag tcc ccg gta gat gct ttc cga gga att	240	
Thr Leu Thr Asp Thr Leu Lys Ser Pro Val Asp Ala Phe Arg Gly Ile		
65 70 75 80		
cca tac gca ttg cct cca att ggg gat aga cgg ttt cgc cgt gcg gag	288	
Pro Tyr Ala Leu Pro Pro Ile Gly Asp Arg Arg Phe Arg Arg Ala Glu		
85 90 95		
gct gtc cat gcg acg gac gag att atc gat gct agt gaa ttc ggc cca	336	
Ala Val His Ala Thr Asp Glu Ile Ile Asp Ala Ser Glu Phe Gly Pro		
100 105 110		
agg tgc cct gga aag cag ctc ttg aat cca aat gac ata ggt ggt gat	384	
Arg Cys Pro Gly Lys Gln Leu Leu Asn Pro Asn Asp Ile Gly Gly Asp		
115 120 125		
gaa gac tgt ctc aca gtc aat gtc ttc cgg cct cat ggc gct cag gga	432	
Glu Asp Cys Leu Thr Val Asn Val Phe Arg Pro His Gly Ala Gln Gly		
130 135 140		
aaa ctc cct gtc gct gta tac gtg cac ggc gga gcc tac aat cgc ggc	480	
Lys Leu Pro Val Ala Val Tyr Val His Gly Gly Ala Tyr Asn Arg Gly		
145 150 155 160		
act gct aaa tat cca gcc tcc gga cac aac acg gcc tcg atg gtc ggc	528	
Thr Ala Lys Tyr Pro Ala Ser Gly His Asn Thr Ala Ser Met Val Gly		
165 170 175		
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Trp Ser Asp Glu Pro Phe Val Ala Val Ser Phe Asn Tyr Arg Ile Gly		
180 185 190		
gcc ctc ggc ttc ctc cca tcc acc cta acc gcc aaa gaa gga atc ctc	624	
Ala Leu Gly Phe Leu Pro Ser Thr Leu Thr Ala Lys Glu Gly Ile Leu		
195 200 205		
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Asn Leu Gly Leu His Asp Gln Ile Leu Leu Gln Trp Val Gln Glu		
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aac atc gca cat ttc aac ggc gac cca acc caa gtc act cta atc ggc	720	
Asn Ile Ala His Phe Asn Gly Asp Pro Thr Gln Val Thr Leu Ile Gly		
225 230 235 240		
ctc tcc gcc ggc gcg cac tcc ata gcc cac cac atc atg aac tac aac	768	
Leu Ser Ala Gly Ala His Ser Ile Ala His His Ile Met Asn Tyr Asn		
245 250 255		
cca cca aac acc ccc ctc ttt cac cgc gcc atc atc gaa tcc ggc gcc	816	
Pro Pro Asn Thr Pro Leu Phe His Arg Ala Ile Ile Glu Ser Gly Ala		
260 265 270		

gcc acc tcc cgc gcc gtc cac ccc tac aac gcc tcc ctc cac gaa tcc	864
Ala Thr Ser Arg Ala Val His Pro Tyr Asn Ala Ser Leu His Glu Ser	
275 280 285	
caa ttc aca gac ttc ctc act gaa acg ggc tgc act aac ctc ccc gac	912
Gln Phe Thr Asp Phe Leu Thr Glu Thr Gly Cys Thr Asn Leu Pro Asp	
290 295 300	
act gcc att ttg ccc tgt ctc cgc gcc ctc cca tcc tca gcc att acc	960
Thr Ala Ile Leu Pro Cys Leu Arg Ala Leu Pro Ser Ser Ala Ile Thr	
305 310 315 320	
acc gcc tcc atc tcc gtc ttc gac aaa tac aac ccc tcc atc cgc tgg	1008
Thr Ala Ser Ile Ser Val Phe Asp Lys Tyr Asn Pro Ser Ile Arg Trp	
325 330 335	
gcc ttc caa ccc gtc atc gac cac gag atc atc cac cgc cgcc ccc atc	1056
Ala Phe Gln Pro Val Ile Asp His Glu Ile Ile His Arg Arg Pro Ile	
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gac gcc tgg cgc tca gga aag tgg aat agg atg ccc atc cta acg ggc	1104
Asp Ala Trp Arg Ser Gly Lys Trp Asn Arg Met Pro Ile Leu Thr Gly	
355 360 365	
ttc aac tcg aac gag ggg aca tac tac gtc cct cgc aac ctc tct ctc	1152
Phe Asn Ser Asn Glu Gly Thr Tyr Tyr Val Pro Arg Asn Leu Ser Leu	
370 375 380	
tcc gag gat ttc act tcg ttc ttc cga acc ctc ctc ccc gcg tac ccc	1200
Ser Glu Asp Phe Thr Ser Phe Arg Thr Leu Leu Pro Ala Tyr Pro	
385 390 395 400	
gag agc gac atc cag acc atc gat gag atc tac ccc gat ccg aat gta	1248
Glu Ser Asp Ile Gln Thr Ile Asp Glu Ile Tyr Pro Asp Pro Asn Val	
405 410 415	
tat gct acg gcg tcg cca tac ctc gag aca agg ccg atc ccg agt cta	1296
Tyr Ala Thr Ala Ser Pro Tyr Leu Glu Thr Arg Pro Ile Pro Ser Leu	
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gga agg cag ttt aag cgg ctg gag gcg gcg tat ggg cat tat gcg tat	1344
Gly Arg Gln Phe Lys Arg Leu Glu Ala Ala Tyr Gly His Tyr Ala Tyr	
435 440 445	
gcg tgt cca gta cgg cag acg gcg ggg ttt gtt gct aat gat gat ggt	1392
Ala Cys Pro Val Arg Gln Thr Ala Gly Phe Val Ala Asn Asp Asp Gly	
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Cys Gly Glu Pro Val Phe Leu Tyr Arg Trp Ala Leu Asn Lys Thr Val	
465 470 475 480	
att gga ggc gcg aac cat ggt gat cag atg gag tat gag acg ttt aat	1488
Ile Gly Gly Ala Asn His Gly Asp Gln Met Glu Tyr Glu Thr Phe Asn	
485 490 495	
cct gcg gtt agg gat att tcg gag gct cag agg gag gtt gcg ggg ttg	1536
Pro Ala Val Arg Asp Ile Ser Glu Ala Gln Arg Glu Val Ala Gly Leu	
500 505 510	
ttt cat gcg tat gtg act tcg ttt gtg gtg cat ggg gat ccg aat gtt	1584
Phe His Ala Tyr Val Thr Ser Phe Val Val His Gly Asp Pro Asn Val	
515 520 525	
ctg ggg ggt agg tat gag ggg agg gag gtt tgg gag agg tat agt ggg	1632
Leu Gly Gly Arg Tyr Glu Gly Arg Glu Val Trp Glu Arg Tyr Ser Gly	
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gag gga ggg gag gtg atg gtg ttt ggg gag ggg aat gat gaa cgt gct	1680
Glu Gly Gly Glu Val Met Val Phe Gly Glu Gly Asn Asp Glu Arg Ala	
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Gly Gly Asp Gly Val Gly Val Ala Ala Arg Leu Lys Arg Asp Glu Trp	
565 570 575	
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Gly Val Lys Glu Cys Gly Phe Trp Ser Gly Arg Ser Gly Ile Ser Glu	
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Ala Ile Leu Ala Pro Trp Val Pro Ala Ala Leu Gln Asp Val Val Leu
35 40 45
Tyr Asn Arg Pro Arg Val Ile Ile Pro Gln Gly Thr Val Val Gly Thr
50 55 60
Thr Leu Thr Asp Thr Leu Lys Ser Pro Val Asp Ala Phe Arg Gly Ile
65 70 75 80
Pro Tyr Ala Leu Pro Pro Ile Gly Asp Arg Arg Phe Arg Arg Ala Glu
85 90 95
Ala Val His Ala Thr Asp Glu Ile Ile Asp Ala Ser Glu Phe Gly Pro
100 105 110
Arg Cys Pro Gly Lys Gln Leu Leu Asn Pro Asn Asp Ile Gly Gly Asp
115 120 125
Glu Asp Cys Leu Thr Val Asn Val Phe Arg Pro His Gly Ala Gln Gly
130 135 140
Lys Leu Pro Val Ala Val Tyr Val His Gly Gly Ala Tyr Asn Arg Gly
145 150 155 160
Thr Ala Lys Tyr Pro Ala Ser Gly His Asn Thr Ala Ser Met Val Gly
165 170 175
Trp Ser Asp Glu Pro Phe Val Ala Val Ser Phe Asn Tyr Arg Ile Gly
180 185 190
Ala Leu Gly Phe Leu Pro Ser Thr Leu Thr Ala Lys Glu Gly Ile Leu
195 200 205
Asn Leu Gly Leu His Asp Gln Ile Leu Leu Leu Gln Trp Val Gln Glu
210 215 220
Asn Ile Ala His Phe Asn Gly Asp Pro Thr Gln Val Thr Leu Ile Gly
225 230 235 240
Leu Ser Ala Gly Ala His Ser Ile Ala His His Ile Met Asn Tyr Asn
245 250 255
Pro Pro Asn Thr Pro Leu Phe His Arg Ala Ile Ile Glu Ser Gly Ala
260 265 270
Ala Thr Ser Arg Ala Val His Pro Tyr Asn Ala Ser Leu His Glu Ser
275 280 285
Gln Phe Thr Asp Phe Leu Thr Glu Thr Gly Cys Thr Asn Leu Pro Asp
290 295 300
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305 310 315 320
Thr Ala Ser Ile Ser Val Phe Asp Lys Tyr Asn Pro Ser Ile Arg Trp
325 330 335
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355 360 365
Phe Asn Ser Asn Glu Gly Thr Tyr Tyr Val Pro Arg Asn Leu Ser Leu
370 375 380
Ser Glu Asp Phe Thr Ser Phe Phe Arg Thr Leu Leu Pro Ala Tyr Pro
385 390 395 400
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405 410 415

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Gly	Arg	Gln	Phe	Lys	Arg	Leu	Glu	Ala	Ala	Tyr	Gly	His	Tyr	Ala	Tyr
435								440							445
Ala	Cys	Pro	Val	Arg	Gln	Thr	Ala	Gly	Phe	Val	Ala	Asn	Asp	Asp	Gly
450								455							460
Cys	Gly	Glu	Pro	Val	Phe	Leu	Tyr	Arg	Trp	Ala	Leu	Asn	Lys	Thr	Val
465								470							480
Ile	Gly	Gly	Ala	Asn	His	Gly	Asp	Gln	Met	Glu	Tyr	Glu	Thr	Phe	Asn
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Pro	Ala	Val	Arg	Asp	Ile	Ser	Glu	Ala	Gln	Arg	Glu	Val	Ala	Gly	Leu
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Phe	His	Ala	Tyr	Val	Thr	Ser	Phe	Val	Val	His	Gly	Asp	Pro	Asn	Val
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Leu	Gly	Gly	Arg	Tyr	Glu	Gly	Arg	Glu	Val	Trp	Glu	Arg	Tyr	Ser	Gly
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Glu	Gly	Gly	Glu	Val	Met	Val	Phe	Gly	Glu	Gly	Asn	Asp	Glu	Arg	Ala
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Gly	Gly	Asp	Gly	Val	Gly	Val	Ala	Ala	Arg	Leu	Lys	Arg	Asp	Glu	Trp
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Thr Leu Ala Ser Thr Gln Asn Ala Asp Thr Pro Thr Ser Ala Pro Thr					
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Val Gln Val Arg Asn Gly Thr Tyr Glu Gly Leu Tyr Asn Pro Thr Tyr					
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aat cag gac ttg ttc ctc ggc ata ccg tat gcg cag cct ccg gtt ggt					192
Asn Gln Asp Leu Phe Leu Gly Ile Pro Tyr Ala Gln Pro Pro Val Gly					
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Glu Leu Arg Phe Arg Pro Pro Gln Pro Leu Asn Thr Thr Trp Thr Gly					
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Thr Arg Asn Ala Thr Ala Tyr Tyr Asn Glu Cys Ile Gly Tyr Gly Ser	
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Asp Asp Trp Tyr Trp Thr Asp Val Val Ser Glu Asp Cys Leu Ala Leu	
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Ser Val Ile Arg Pro His Gly Ile Asp Ser Ser Ala Lys Leu Pro Val	
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Val Phe Trp Met His Gly Gly Glu Phe Ala Glu Gly Gly Thr Arg Asp	
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Phe Leu Tyr Ser Gln Glu Val Ala Asp Glu Gly Ser Ala Asn Leu Gly	
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Leu Ala Ala Tyr Met Ser Ala Glu Asp Ala Gln Pro Tyr Tyr Asp Ala	
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Pro Leu Leu Ile Gly Thr Asn Phe Asp Glu Gly Thr Lys Tyr Ala Pro	
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Asn	Val	Pro	Ala	Tyr	Val	Tyr	His	Trp	Asn	Val	Met	Thr	Leu	Gly	Pro	
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Leu	Asp	Gly	Ala	Ala	His	Gly	Tyr	Glu	Val	Pro	Phe	Ser	Phe	His	Asn	
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Tyr	Asp	Gly	Leu	Gly	Asp	Glu	Arg	Gly	Asn	Asp	Ser	Val	Thr	Trp	Pro	
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Gln	Leu	Ser	Thr	Met	Met	Ser	Arg	Met	Trp	Val	Ser	Phe	Ile	Asn	His	
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Asn Gln Asp Leu Phe Leu Gly Ile Pro Tyr Ala Gln Pro Pro Val Gly
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Ser	Pro	Ile	Ile	Gly	Val	Thr	Val	Asn	Tyr	Arg	Leu	Ser	Gly	Trp	Gly
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 Asn Val Pro Ala Tyr Val Tyr His Trp Asn Val Met Thr Leu Gly Pro
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 Tyr Asp Gly Leu Gly Asp Glu Arg Gly Asn Asp Ser Val Thr Trp Pro
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Gly Ile Tyr Met Ser Ser Val Phe Ala Ser Ala Gly Val Asn Ser Trp		
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Asn Tyr His Tyr Ala Val Gln Asp Pro Ala Ala Glu Ala Ser Gly Arg			
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Gly Val Ser His Thr Val Glu Glu Asn Ala Ile Trp Gly Pro Gln Tyr			
435	440	445	
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Val Ser Gly Thr Pro Pro Ala Ser Tyr Leu Thr Glu Asn Ala Pro Ile			
450	455	460	
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Val Pro Val Met Gln Gly Tyr Trp Thr Ser Phe Ile Arg Val Phe Asp			
465	470	475	480
ccg aat ccg ctg agg tat ccg ggg agt ccg gag tgg aag acg tgg agt			1488
Pro Asn Pro Leu Arg Tyr Pro Gly Ser Pro Glu Trp Lys Thr Trp Ser			
485	490	495	
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Asp Gly His Gly Glu Asp Tyr Arg Arg Ile Phe Val Arg Thr Asn Glu			
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Thr Arg Met Glu Thr Val Ser Glu Ala Gln Arg Glu Arg Cys Glu Tyr			
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Gly Lys Ser Leu Pro Asn Gly Ile Ser Gln Trp Leu Gly Ile Arg Tyr			
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Ala Ala Ala Pro Thr Gly Ser Leu Arg Phe Ser Ala Pro Gln Asp Pro			
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Asp Thr Val Asp Gly Val Gln Glu Ala Phe Lys His Gly Pro Arg Cys			
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Val Pro Thr Ser Gln Tyr Pro Thr Pro Ala Gly Thr Ser Glu Asp Cys			
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Leu Phe Leu Asp Val Tyr Ala Pro Ser Ser Val Glu Ala Thr Thr Arg			
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Leu Pro Val Phe Val Trp Ile Gln Gly Gly Phe Asn Ala Asn Ser			
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Ser Pro Asn Tyr Asn Gly Thr Gly Leu Ile Glu Ala Ala Asn Met Ser			
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Ser Gly Ser Glu Val Leu Glu Gly Gly Ser Val Asn Asn Gly Leu Lys			
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Asp Gln Ile Lys Val Leu Lys Trp Val Gln Glu His Ile Ser Lys Phe			
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Gly Gly Asp Pro Ser His Val Val Ile Gly Gly Asp Ser Ala Gly Ala			
195	200	205	
Ala Ser Ile Thr Leu His Leu Ser Ala His Gly Gly Arg Asp Asp Glu			
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Leu Phe His Ala Ala Ala Ala Glu Ser Gln Ser Phe Ala Pro Met Leu			
225	230	235	240

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Gln	Gln	Ala	Pro	Leu	Tyr	Leu	Tyr	Gly	Pro	Val	Val	Asp	Gly	Ser	Leu
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Ile	Pro	Asp	Tyr	Thr	Tyr	Arg	Leu	Phe	Gln	Gln	Gly	Lys	Phe	Ile	Lys
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Pro	Lys	Thr	Thr	Ser	Thr	Val	Gly	Glu	Ala	Asp	Thr	Phe	Ile	Gln	Asp
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Gln	Phe	Pro	Asn	Ile	Asn	Phe	Thr	His	Leu	Thr	Lys	Leu	Asn	Asp	Trp
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Tyr	Leu	Lys	Glu	Asn	Gln	Thr	Arg	Glu	Phe	Pro	Asn	Ser	Ser	Pro	Tyr
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Trp	Arg	Pro	Ala	Ser	Thr	Ala	Tyr	Gly	Glu	Ile	Arg	Tyr	Ile	Cys	Pro
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Gly	Ile	Tyr	Met	Ser	Ser	Val	Phe	Ala	Ser	Ala	Gly	Val	Asn	Ser	Trp
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Asn	Tyr	His	Tyr	Ala	Val	Gln	Asp	Pro	Ala	Ala	Glu	Ala	Ser	Gly	Arg
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Val	Ser	Gly	Thr	Pro	Pro	Ala	Ser	Tyr	Leu	Thr	Glu	Asn	Ala	Pro	Ile
						450			455			460			
Val	Pro	Val	Met	Gln	Gly	Tyr	Trp	Thr	Ser	Phe	Ile	Arg	Val	Phe	Asp
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Pro	Asn	Pro	Leu	Arg	Tyr	Pro	Gly	Ser	Pro	Glu	Trp	Lys	Thr	Trp	Ser
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Asp	Gly	His	Gly	Glu	Asp	Tyr	Arg	Arg	Ile	Phe	Val	Arg	Thr	Asn	Glu
						500			505			510			
Thr	Arg	Met	Glu	Thr	Val	Ser	Glu	Ala	Gln	Arg	Glu	Arg	Cys	Glu	Tyr
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cgtggtaaga	tagcacattt	ctttaaagaa	gaaaaaaaaa	gatgaataca	tataatcgcc	4500
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Ser Leu Ala Thr Cys Thr Asn Pro Val Ala Gln Thr Lys Asn Gly Ser
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tat tat ggt gtc tac atg cct cag tat aat gag gat tat ttt ctt gga 144
Tyr Tyr Gly Val Tyr Met Pro Gln Tyr Asn Glu Asp Tyr Phe Leu Gly
35 40 45
att cca ttt gct aag ccc ccg ttg gca cac ttg cgt tgg gcc aac ccc 192
Ile Pro Phe Ala Lys Pro Pro Leu Ala His Leu Arg Trp Ala Asn Pro
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gag agt ctt aat gag tct tgg tcg gga ttg cgc cct gct acc ggc tat 240
Glu Ser Leu Asn Glu Ser Trp Ser Gly Leu Arg Pro Ala Thr Gly Tyr
65 70 75 80
gcg atg gaa tgt ata ggt tac ggc agt gat caa aaa ggt tat ctg cag 288
Ala Met Glu Cys Ile Gly Tyr Gly Ser Asp Gln Lys Gly Tyr Leu Gln
85 90 95
agc gag gac tgt ctc tac cta aac gtg gtc cgt ccc gct gaa tac gac 336
Ser Glu Asp Cys Leu Tyr Leu Asn Val Val Arg Pro Ala Glu Tyr Asp
100 105 110
aat gcc agt ctt cca gtc ctt gta tgg att cat ggc ggt ggc ttc gca 384
Asn Ala Ser Leu Pro Val Leu Val Trp Ile His Gly Gly Phe Ala
115 120 125
caa ggc ggc act ccc gac ctt cga tac aat ctt aca ttt att gtt gaa 432
Gln Gly Gly Thr Pro Asp Leu Arg Tyr Asn Leu Thr Phe Ile Val Glu
130 135 140
cac tcg gtc aat atc ggc cag cca att atc gca gtg agc gtt gcc tat 480
His Ser Val Asn Ile Gly Gln Pro Ile Ile Ala Val Ser Val Ala Tyr
145 150 155 160
cgt ctc ggt cct tgg ggt ttc ttc aat ggg gtc gag ctc gcc aat gag 528
Arg Leu Gly Pro Trp Gly Phe Phe Asn Gly Val Glu Leu Ala Asn Glu
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Gly Ser Leu Asn Leu Gly Leu Lys Asp Gln Arg Leu Ala Leu His Trp
180 185 190
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Val Lys Glu Asn Ile Ala Gly Phe Gly Gly Asp Pro Ser Lys Val Val
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Ile Tyr Gly Gln Ser Ala Gly Ser Glu Ser Val Gly Tyr Gln Ile Arg
210 215 220
gcg tac aac ggc cga gat gac ggg ctc ttc cgc gga ggc atg atg gag 720
Ala Tyr Asn Gly Arg Asp Asp Gly Leu Phe Arg Gly Gly Met Met Glu
225 230 235 240
tcc ggc gcg gtg tta cct ggc agt gcc ttg aac ctc acc tgg aca tat 768
Ser Gly Ala Val Leu Pro Gly Ser Ala Leu Asn Leu Thr Trp Thr Tyr
245 250 255

gag cct tgg ttc cag caa ata gca gac gag gca gga tgt tcc cag acc	816
Glu Pro Trp Phe Gln Gln Ile Ala Asp Glu Ala Gly Cys Ser Gln Thr	
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Thr Arg Lys Leu Asp Cys Leu Arg Arg Thr Pro Phe Thr Val Leu Asn	
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Asn Ile Leu Asn Thr Thr Ala Asn Asp Thr Thr Pro Tyr Asn Trp Arg	
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ccc aca gtg gac ggt gac ttc gta gcg cga tat ccc agc gag caa ctc	960
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Asp Thr Gly Asp Phe Val Lys Val Pro Ile Ile Ile Gly Tyr Thr Thr	
325 330 335	
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Asp Glu Gly Thr Thr Glu Cys Pro Glu Pro Val Asn Thr Thr Ala Glu	
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Leu Lys Glu Tyr Leu Ser Ser Thr Thr Tyr Gly Trp Ala Leu Asp	
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Ser Gln Val Val Ser Ser Leu Leu Asp Leu Tyr Pro Asn Thr Thr Ser	
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Phe Gly Ile Pro Ser Ser Glu Glu Leu Gly Gly Asn Val Thr Phe Pro	
385 390 395 400	
cag ccc tac ggc gcc gca ttc cgc cag acg gca gca tac tac ggc gac	1248
Gln Pro Tyr Gly Ala Ala Phe Arg Gln Thr Ala Ala Tyr Tyr Gly Asp	
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His Asn Leu Thr Ala Tyr Cys Tyr Arg Phe Asn Thr Lys Thr Asp Asp	
435 440 445	
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Tyr Asn Arg Glu Glu Gly Val Ala His Phe Ser Asp Val Ile Phe Ile	
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Phe Asn Asn Leu Asn Gly Tyr Gly Phe Ser Pro Asn Pro Phe Thr Asn	
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Ala Pro Glu Ser Tyr Glu Leu Ser Tyr Leu Met Ser Gly Ser Trp	
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Ile Ser Phe Thr Asn Ser Leu Asp Pro Asn Lys Trp Thr Gly Arg Gly	
500 505 510	
agg aac gct acg aag acg gag aat tgg ccc gtg tat gat ctg gag aat	1584
Arg Asn Ala Thr Lys Thr Glu Asn Trp Pro Val Tyr Asp Leu Glu Asn	
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ccc ttg agt atg atc tgg gat gcg aat gtc act tcg tat gcg gcg ccg	1632
Pro Leu Ser Met Ile Trp Asp Ala Asn Val Thr Ser Tyr Ala Ala Pro	
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gat act tgg cgt aag gag ggt att gcg ttg att aat gct aat cgg agg	1680
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 Glu Ser Leu Asn Glu Ser Trp Ser Gly Leu Arg Pro Ala Thr Gly Tyr
 65 70 75 80
 Ala Met Glu Cys Ile Gly Tyr Gly Ser Asp Gln Lys Gly Tyr Leu Gln
 85 90 95
 Ser Glu Asp Cys Leu Tyr Leu Asn Val Val Arg Pro Ala Glu Tyr Asp
 100 105 110
 Asn Ala Ser Leu Pro Val Leu Val Trp Ile His Gly Gly Phe Ala
 115 120 125
 Gln Gly Gly Thr Pro Asp Leu Arg Tyr Asn Leu Thr Phe Ile Val Glu
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 His Ser Val Asn Ile Gly Gln Pro Ile Ile Ala Val Ser Val Ala Tyr
 145 150 155 160
 Arg Leu Gly Pro Trp Gly Phe Phe Asn Gly Val Glu Leu Ala Asn Glu
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 Gly Ser Leu Asn Leu Gly Leu Lys Asp Gln Arg Leu Ala Leu His Trp
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 Val Lys Glu Asn Ile Ala Gly Phe Gly Gly Asp Pro Ser Lys Val Val
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 Asp Glu Gly Thr Thr Glu Cys Pro Glu Pro Val Asn Thr Thr Ala Glu
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 Leu Lys Glu Tyr Leu Ser Ser Thr Thr Thr Tyr Gly Trp Ala Leu Asp
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 Phe Gly Ile Pro Ser Ser Glu Glu Leu Gly Gly Asn Val Thr Phe Pro
 385 390 395 400
 Gln Pro Tyr Gly Ala Ala Phe Arg Gln Thr Ala Ala Tyr Tyr Gly Asp
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 Ala Gln Phe Ile Ala Ala Thr Arg Tyr Thr Cys Glu Leu Trp Ala Ala
 420 425 430
 His Asn Leu Thr Ala Tyr Cys Tyr Arg Phe Asn Thr Lys Thr Asp Asp

435	440	445
Tyr Asn Arg Glu Glu Gly Val Ala His Phe Ser Asp Val Ile Phe Ile		
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Phe Asn Asn Leu Asn Gly Tyr Gly Phe Ser Pro Asn Pro Phe Thr Asn		
465	470	475
Ala Pro Glu Ser Tyr Thr Glu Leu Ser Tyr Leu Met Ser Gly Ser Trp		
485	490	495
Ile Ser Phe Thr Asn Ser Leu Asp Pro Asn Lys Trp Thr Gly Arg Gly		
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Arg Asn Ala Thr Lys Thr Glu Asn Trp Pro Val Tyr Asp Leu Glu Asn		
515	520	525
Pro Leu Ser Met Ile Trp Asp Ala Asn Val Thr Ser Tyr Ala Ala Pro		
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ttatcatcta caactcaacc cccgcaccaa gaaatgaatc ctctcgtcgg aagaaaaaaa	300
cgccatttcca gaagaacctt ttccctagata acaaactgatc atcagtccat ccgtcccctga	360
cgatcccccc atcgaacctc ggtaagacgc tcgacccaaa aaccagaccc acaagctttt	420
caacctccct aaacgaaaca acggctgtgt tgatcgtgaa cgtgggttgc tataccaata	480
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cagtccactc ttccatttcc accccttctt tactatctt caataatttc tattcaataa	1140
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<212> DNA
<213> Aspergillus niger

<220>
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Ala Leu Ser Thr Pro Leu Ala Thr Asp Ala Glu Asn Leu Tyr Ala Arg	
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caa ttc ggc acg ggc tct aca gcc aac gaa ctc gag cag gga agc tgc	144
Gln Phe Gly Thr Gly Ser Thr Ala Asn Glu Leu Glu Gln Gly Ser Cys	
35 40 45	
aag gat gtg act ctc atc ttt gcg agg ggg tca act gag ctt ggg aat	192
Lys Asp Val Thr Leu Ile Phe Ala Arg Gly Ser Thr Glu Leu Gly Asn	
50 55 60	
atg ggc acc gta atc ggc ccc cct ctc tgc gac aac ctg aaa tcc aaa	240
Met Gly Thr Val Ile Gly Pro Pro Leu Cys Asp Asn Leu Lys Ser Lys	
65 70 75 80	
ctc gga tcc gac aaa gtc gcc tgc cag ggt gtc ggc ggc caa tac agc	288
Leu Gly Ser Asp Lys Val Ala Cys Gln Gly Val Gly Gly Gln Tyr Ser	
85 90 95	
gcc gga ctc gtg cag aat gcc ctg ccc cag aac acc gat ccg ggg agt	336
Ala Gly Leu Val Gln Asn Ala Leu Pro Gln Asn Thr Asp Pro Gly Ser	
100 105 110	
atc tcc gcc gcg aag cag atg ttc gag gag gcg aat tcg aag tgt ccc	384
Ile Ser Ala Ala Lys Gln Met Phe Glu Glu Ala Asn Ser Lys Cys Pro	
115 120 125	
aat act aag att gtt gcg ggt ggt tat agt caa gga agc gct gtg att	432
Asn Thr Lys Ile Val Ala Gly Gly Tyr Ser Gln Gly Ser Ala Val Ile	
130 135 140	
gac aac gcc gtg caa gaa ctc agc acc acc gtg aaa gac caa gtg aag	480
Asp Asn Ala Val Gln Glu Leu Ser Thr Val Lys Asp Gln Val Lys	
145 150 155 160	
ggt gtc gtg ctc ttc ggg ttc acg aga aac gtg cag gat cac ggg cag	528
Gly Val Val Leu Phe Gly Phe Thr Arg Asn Val Gln Asp His Gly Gln	
165 170 175	
atc cct aat tac cct aag gat gac gtg aag gtt tat tgt gcc gtg ggc	576
Ile Pro Asn Tyr Pro Lys Asp Asp Val Lys Val Tyr Cys Ala Val Gly	
180 185 190	
gat ctg gtc tgt gat gat acg ttg gtt acg gcg atg cat ctg acg	624
Asp Leu Val Cys Asp Asp Thr Leu Val Val Thr Ala Met His Leu Thr	
195 200 205	
tat ggc atg gat gcg ggt gat gcg gcg agc ttt ttg gcc gag aag gtg	672
Tyr Gly Met Asp Ala Gly Asp Ala Ala Ser Phe Leu Ala Glu Lys Val	
210 215 220	
cag tct tcc agt agt tcg act act agc tcc agc tcg gat gcc gcg agt	720
Gln Ser Ser Ser Ser Thr Thr Ser Ser Ser Ser Asp Ala Ala Ser	
225 230 235 240	

agt tca tct gct gcg ggg acg tcg tcg tcg ggg ttg tcg gga ctg tct	768
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245 250 255	
tct ttt ttt gga ggt ctc taa	789
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<213> Aspergillus niger

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35 40 45	
Lys Asp Val Thr Leu Ile Phe Ala Arg Gly Ser Thr Glu Leu Gly Asn	
50 55 60	
Met Gly Thr Val Ile Gly Pro Pro Leu Cys Asp Asn Leu Lys Ser Lys	
65 70 75 80	
Leu Gly Ser Asp Lys Val Ala Cys Gln Gly Val Gly Gly Gln Tyr Ser	
85 90 95	
Ala Gly Leu Val Gln Asn Ala Leu Pro Gln Asn Thr Asp Pro Gly Ser	
100 105 110	
Ile Ser Ala Ala Lys Gln Met Phe Glu Glu Ala Asn Ser Lys Cys Pro	
115 120 125	
Asn Thr Lys Ile Val Ala Gly Gly Tyr Ser Gln Gly Ser Ala Val Ile	
130 135 140	
Asp Asn Ala Val Gln Glu Leu Ser Thr Thr Val Lys Asp Gln Val Lys	
145 150 155 160	
Gly Val Val Leu Phe Gly Phe Thr Arg Asn Val Gln Asp His Gly Gln	
165 170 175	
Ile Pro Asn Tyr Pro Lys Asp Asp Val Lys Val Tyr Cys Ala Val Gly	
180 185 190	
Asp Leu Val Cys Asp Asp Thr Leu Val Val Thr Ala Met His Leu Thr	
195 200 205	
Tyr Gly Met Asp Ala Gly Asp Ala Ala Ser Phe Leu Ala Glu Lys Val	
210 215 220	
Gln Ser Ser Ser Ser Ser Thr Thr Ser Ser Ser Ser Asp Ala Ala Ser	
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<210> 37
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<213> Aspergillus niger

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ccttcctta taatggctgc cccggcaaac ccccaattgc tgtttaggcc agcgcagata	180
gcaaatctct cgtctgatta acgatgctaa agctcgctgt tgctctttt tcgttacttg	240
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<210> 38
<211> 1686
<212> DNA
<213> *Aspergillus niger*

<220>
<221> CDS
<222> (1)..(1686)

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1           5           10          15
gca gcg cca acc aaa gtg gcc cgt tcc acg gcc agt cct acg gcc aag      96

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Val	Arg	Asn	Gly	Thr	Tyr	Val	Gly	Val	Thr	Asn	Ala	His	Tyr	Gln	Gln	
35								40					45			
gat	ttc	ttt	ttg	gga	atg	ccg	tat	gcc	cag	cag	cct	tta	ggc	gac	ttg	192
Asp	Phe	Phe	Leu	Gly	Met	Pro	Tyr	Ala	Gln	Gln	Pro	Leu	Gly	Asp	Leu	
50								55					60			
cgc	tcc	acg	gtg	cct	cag	tcc	ctg	aac	gaa	agc	tgg	agt	ggc	gag	cgc	240
Arg	Phe	Thr	Val	Pro	Gln	Ser	Leu	Asn	Glu	Ser	Trp	Ser	Gly	Glu	Arg	
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Asp	Ala	Lys	Glu	Tyr	Ser	Asn	Ile	Cys	Val	Gly	Tyr	Gly	Thr	Asp	Ser	
85								90					95			
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Ile	Trp	Tyr	Pro	Gln	Ser	Glu	Ala	Cys	Leu	Thr	Leu	Asn	Val	Ile	Arg	
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Asp	Ser	Ser	Ala	Asn	Glu	Asn	Ser	Lys	Leu	Pro	Val	Gly	Val	Trp	Ile	
115								120					125			
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His	Gly	Gly	Phe	Phe	Glu	Gly	Ser	Ser	Ala	Asp	Gln	Arg	Tyr	Asn		
130								135					140			
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Met	Ser	Ala	Ile	Val	Ala	Asn	Ser	Tyr	Lys	Ile	Gly	Lys	Pro	Phe	Ile	
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gct	gtc	agc	tta	aac	tat	cgc	ctt	tcg	gca	tgg	ggc	ttc	ttg	agt	tcc	528
Ala	Val	Ser	Leu	Asn	Tyr	Arg	Leu	Ser	Ala	Trp	Gly	Phe	Leu	Ser	Ser	
165								170					175			
agt	caa	gtc	tgg	ggc	act	ggc	aat	acc	aat	cta	ggt	atc	agg	gat	caa	576
Ser	Gln	Val	Trp	Gly	Thr	Gly	Asn	Thr	Asn	Leu	Gly	Ile	Arg	Asp	Gln	
180								185					190			
agg	tta	gca	ctc	cat	tgg	atc	aag	gag	aat	atc	gct	gca	ttc	gga	gga	624
Arg	Leu	Ala	Leu	His	Trp	Ile	Lys	Glu	Asn	Ile	Ala	Ala	Phe	Gly	Gly	
195								200					205			
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Asp	Pro	Asp	Lys	Ile	Thr	Ile	Trp	Gly	Glu	Ser	Ala	Gly	Ala	Met	Ser	
210								215					220			
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Val	Gly	Tyr	His	Leu	Ala	Ala	Tyr	Gly	Gly	Arg	Asp	Asp	Gly	Leu	Phe	
225								230					235			240
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Arg	Gly	Gly	Ile	Met	Glu	Ser	Gly	Gly	Thr	Ile	Ala	Ala	Ser	Pro	Ala	
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Asn	Tyr	Thr	Gly	Tyr	Gln	Ala	His	Tyr	Asp	Glu	Leu	Ala	Gly	Gln	Val	
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Gly	Cys	Ser	Asp	Val	Val	Asp	Ser	Leu	Gln	Cys	Leu	Arg	Glu	Val	Pro	
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Phe	Glu	Lys	Leu	Asn	Ala	Ala	Leu	Asn	Thr	Thr	Ser	Gly	Asn	Ser	Asp	
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agc	ctc	cag	cta	gac	aag	cat	gaa	ttc	gtc	aaa	gtc	cct	att	ctt	gca	1008
Ser	Leu	Gln	Leu	Asp	Lys	His	Glu	Phe	Val	Lys	Val	Pro	Ile	Leu	Ala	
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Thr	Thr	Glu	Glu	Phe	Tyr	Ala	Tyr	Leu	Thr	Asp	Gly	Glu	Ser	Gly	Phe			
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cag	cta	ccc	ccc	acg	atc	gcc	cag	gaa	atc	ctg	cag	ctc	tac	cct	gat	1152		
Gln	Leu	Pro	Pro	Thr	Ile	Ala	Gln	Glu	Ile	Leu	Gln	Leu	Tyr	Pro	Asp			
370						375					380							
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385						390				395				400				
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Ser	Lys	Gly	Tyr	Gln	Trp	Arg	Arg	Thr	Cys	Ala	Tyr	Ala	Gly	Asp	Tyr			
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gta	atg	cat	gcc	aac	cgt	cgc	cga	caa	tgt	gag	g	tg	g	ac	acc	1296		
Val	Met	His	Ala	Asn	Arg	Arg	Arg	Gln	Cys	Glu	Ala	Trp	Thr	Glu	Thr			
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tcg	acg	acg	g	tac	tgt	tat	cga	ttc	aat	atg	cgt	g	cc	gat	gtc	1344		
Ser	Thr	Thr	Ala	Tyr	Cys	Tyr	Arg	Phe	Asn	Met	Arg	Ala	Ala	Asp	Val			
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ccc	atc	ctg	tct	ggc	gcc	acc	cat	ttt	gaa	gaa	gtt	g	ct	t	ttc	1392		
Pro	Ile	Leu	Ser	Gly	Ala	Thr	His	Phe	Glu	Glu	Val	Ala	Phe	Val	Phe			
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Met	Pro	Glu	Ser	Tyr	Val	Gln	Leu	Ser	Asn	Leu	Met	Thr	Ser	Met	Trp			
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gca	tcc	ttc	atc	cac	gat	tta	gac	cct	aat	tcg	gg	atc	aag	gac	tca	1536		
Ala	Ser	Phe	Ile	His	Asp	Leu	Asp	Pro	Asn	Ser	Gly	Ile	Lys	Asp	Ser			
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Ala	Val	Gln	Trp	Gln	Pro	Tyr	Gly	Lys	Asp	Gln	Pro	Val	Asp	Leu	Val			
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ttt	gat	g	tc	ac	tg	ac	tg	ac	tg	atg	gag	cc	gac	ac	tgg	1632		
Phe	Asp	Ala	Asn	Val	Thr	Ser	Tyr	Ser	Tyr	Met	Glu	Pro	Asp	Thr	Trp			
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cgg	aag	gag	ggg	atc	gac	tat	atc	aat	tcc	gtg	gg	cc	aac	gcg	tac	1680		
Arg	Lys	Glu	Gly	Ile	Asp	Tyr	Ile	Asn	Ser	Val	Ala	Asn	Ala	Tyr	Trp			
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Arg																		

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<211> 561
<212> PRT
<213> Aspergillus niger

<400> 39

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Asp Ser Ser Ala Asn Glu Asn Ser Lys Leu Pro Val Gly Val Trp Ile			
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His Gly Gly Gly Phe Phe Glu Gly Ser Ser Ala Asp Gln Arg Tyr Asn			
130	135	140	
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Ala Val Ser Leu Asn Tyr Arg Leu Ser Ala Trp Gly Phe Leu Ser Ser			
165	170	175	
Ser Gln Val Trp Gly Thr Gly Asn Thr Asn Leu Gly Ile Arg Asp Gln			
180	185	190	
Arg Leu Ala Leu His Trp Ile Lys Glu Asn Ile Ala Ala Phe Gly Gly			
195	200	205	
Asp Pro Asp Lys Ile Thr Ile Trp Gly Glu Ser Ala Gly Ala Met Ser			
210	215	220	
Val Gly Tyr His Leu Ala Ala Tyr Gly Gly Arg Asp Asp Gly Leu Phe			
225	230	235	240
Arg Gly Gly Ile Met Glu Ser Gly Gly Thr Ile Ala Ala Ser Pro Ala			
245	250	255	
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260	265	270	
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275	280	285	
Phe Glu Lys Leu Asn Ala Ala Leu Asn Thr Thr Ser Gly Asn Ser Asp			
290	295	300	
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Ser Leu Gln Leu Asp Lys His Glu Phe Val Lys Val Pro Ile Leu Ala			
325	330	335	
Gly Thr Asn Thr Asp Glu Gly Thr Ala Phe Gly Pro Thr Gly Ile Asn			
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Thr Thr Glu Glu Phe Tyr Ala Tyr Leu Thr Asp Gly Glu Ser Gly Phe			
355	360	365	
Gln Leu Pro Pro Thr Ile Ala Gln Glu Ile Leu Gln Leu Tyr Pro Asp			
370	375	380	
Asp Pro Ala Leu Gly Ile Pro Glu Phe Leu Gly Asp Thr Arg Val Pro			
385	390	395	400
Ser Lys Gly Tyr Gln Trp Arg Arg Thr Cys Ala Tyr Ala Gly Asp Tyr			
405	410	415	
Val Met His Ala Asn Arg Arg Arg Gln Cys Glu Ala Trp Thr Glu Thr			
420	425	430	
Ser Thr Thr Ala Tyr Cys Tyr Arg Phe Asn Met Arg Ala Ala Asp Val			
435	440	445	
Pro Ile Leu Ser Gly Ala Thr His Phe Glu Glu Val Ala Phe Val Phe			
450	455	460	
Asn Asn Ile Ala Gly Leu Gly Tyr His Tyr Gly Lys Pro Phe Ala Gly			
465	470	475	480
Met Pro Glu Ser Tyr Val Gln Leu Ser Asn Leu Met Thr Ser Met Trp			
485	490	495	
Ala Ser Phe Ile His Asp Leu Asp Pro Asn Ser Gly Ile Lys Asp Ser			
500	505	510	
Ala Val Gln Trp Gln Pro Tyr Gly Lys Asp Gln Pro Val Asp Leu Val			
515	520	525	
Phe Asp Ala Asn Val Thr Ser Tyr Ser Tyr Met Glu Pro Asp Thr Trp			
530	535	540	
Arg Lys Glu Gly Ile Asp Tyr Ile Asn Ser Val Ala Asn Ala Tyr Trp			
545	550	555	560

Arg